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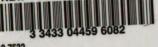
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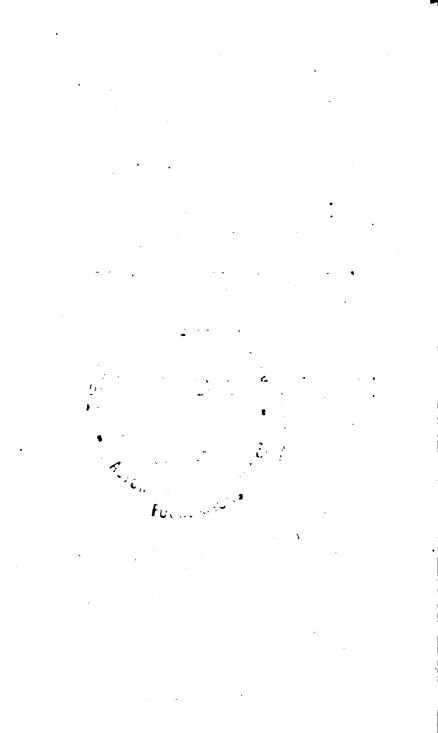
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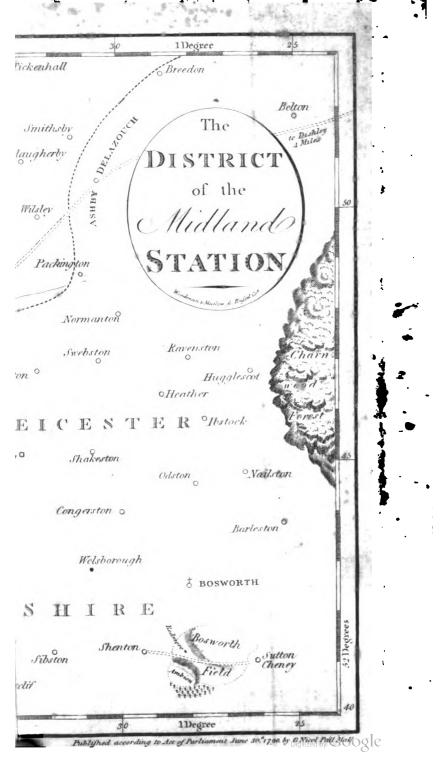
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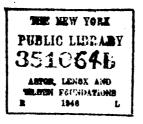
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THE R, URAL ECONOMY OF THE AIDLAND COUNTIES; INCLUDING THE MANAGEMENT OF LIVESTOCK LEICESTERSHIRE AND ITS ENVIRONS TOGETHER WITH • MINUTES AGRICULTURE AND PLANTING. · , IN'THE DISTRICT OF THE MIDLAND STATION. , By Mr. MARSHALL. IN TWO VOLUMES. VOL. L. : 1 LONDON: LINTED FOR G. NICOL, BOOKSELLER TO HIS MAJESTY, PALL MALL ر**، ۲ د. ۵** ۵ د ر Digitized by GOOGLE



TO HIS

ROYAL HIGHNESS

THE

PRINCE OF WALES.

SIR,

I F YOUR HIGHNESS'S virtues were not publicly known, I fhould think it my duty, and it would be my higheft gratification, to declare them in this addrefs. But on a fubject fo well underftood, and fo fully illustrated in YOUR ROYAL HIGHNESS'S conduct, the tribute of my pen could not avail.

Therefore, without attempting to praife, and without daring to flatter, I prefume to inform Your HIGHNESS that I am purfuing a PLAN, Vol. I. A which,

DEDICATION.

which, in its principles, is calculated to prolong the PROSPERITY of the ENGLISH NATION; and that nothing could alleviate fo much the labour of the purfuit, as the APPROBATION of YOUR ROYAL HIGHNESS; nor anything add fo much to the celebrity of the undertaking, as the PATRONAGE of THE PRINCE OF WALES.

Permit me, then, in YOUR HIGH-NESS'S known goodnefs of difpofition, to commit these Volumes, as a part of the General Work, to YOUR ROYAL PATRONAGE; and to declare myself with becoming respect, and with the most perfect attachment to YOUR HIGHNESS'S CHARACTER,

YOUR ROYAL HIGHNESS'S

MOST OBEDIENT AND

MOST HUMBLE SERVANT,

WILLIAM MARSHALL.

LONDON, JULY 1, 1790.

A D V E R T I S E M E N T

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29

FIRST VOLUME.

THE MATERIALS of this Volume were collected, chiefly, fome years ago, during a refidence in the MIDLAND COUNTIES of fomewhat more than two years*.

But, with a view to the fulness and accuracy of the register, I have fince thought it expedient to make a second survey of LEICESTERSHIRE and itSENVIRONS, where I spent three months of the last summer (1789); my principal object, in this second view, being that of making myself more fully acquainted with the subject of LIVE-STOCK.

A 2 THUS

* At STATFOLD, near the junction of the the four counties of LEICESTER, WARWICK, STAFFORD, and DERBY, where I chiefly refided, from March 1784 to April 1786.

ADVERTISEMENT.

THUS THE PUBLIC are furnished with a detail of the progress of this undertaking, from the first proposal of it, in 1780, to the present time: a period of somewhat more than ten years.

The practice of NORFOLK was collected in the years 1780, 1781, and 1782, and published in 1787.

That of YORKSHIRE, in 1782 and 1787, and published in 1788.

That of GLOCESTERSHIRE, in 1782 and 1788, and published in 1789.

That of the MIDLAND COUNTIES, in 1784, 1785, 1786, 1789, and is now under publication.

It may be proper to add, that the PUBLIC are now likewife furnished with the whole of the information I have hitherto collected on the fubject of RURAL ECONOMY; excepting that which I neceffarily obtained of the established practice of the southern counties during five years residence in them*; also excepting a variety of detached

* See MINUTES OF AGRICULTURE, &c. IN SURREY.

ADVERTISEMENT.

tached ideas, which, being deemed in themfelves not fufficiently important, or not yet fufficiently authenticated, to admit of being published in their present state, still remain scattered in the original papers belonging to the feveral Diftricts I have refided in; and excepting fuch other defultory ideas as I have collected in paffing between District and District. No part of either of these, however, are intended for feparate publication; and the practice of the SOUTHERN COUNTIES requires a fecond and deliberate furvey, before a detail of it can be entitled to the reception of the PUBLIC.

ERRORS OF THE PRESS.

Vol. I. page 65, line 4, from the bottom, for utter, read entire.

- page 73, line 9, for effort, read effect.



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THE,

RURAL ECONOMY

OF THE

MIDLAND COUNTIES.

THE ISLAND, if its furface could be brought within a fingle point of view, would appear ftrongly featured by an affociation of mountain, upland, and vale, interfperfed with irregular tracts of middleland country, partaking of the nature of vale; but, having no regular chain of highlands on their margins, are not diftinguishable by that name.

The northern and the western provinces abound with mountains and bold highlands;

Vol. I. B while

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while the eaftern, the fouthern, and the midland counties, though they fometimes rife to chalky heights, with fome few heathy barren fwells, are feldom diftinguishable into highland and vale.

As objects of RURAL ECONOMY, however, these middle-land tracts are, generally, very fimilar to vale districts; the foil and produce of each being fimilar: with, however, fome exceptions; as East Norfolk, for instance, which, though it lies flat and fomewhat low, is most of it covered with a light fandy foil; and a few other instances might be produced: but, in general, the foil of this description of country is of a stronger, more clayey nature.

The district, which forms the fubject of the prefent volumes, bears the last defcription; being the largest tract of the kind in the island; including the principal parts of the counties of Leicester, RUTLAND, and WARWICK, with the northern margin of NORTHAMPTONSHIRE, the eastern point of STAFFORDSHIRE, and the fouthern extremities of DERBYSHIRE and NOTTING-HAMSHIRE, the town of LEICESTER being fituated near its center.

This

This fertile tract of country, which I shall distinguish by the MIDLAND DISTRICT, measures; in some directions, not less than fifty miles across, in none, I believe, less than forty; confequently, contains at least fifteen hundred square miles of surface; with no other drawback from its fertility, than the Charnwood hills, which do not contain fifty miles of infertile solit*.

This diffrict I have traversed in almost every direction, and have, I believe, made myself sufficiently acquainted with its rural affairs, to give me an adequate idea of its GENERAL MANAGEMENT; especially as it relates to LIVESTOCK.

B 2

* LEICESTERSHIRE, however, contains two other plots of furface, lefs fertile than the reft of the diftrict. One on the northern margin; diffinguifhed by the name of the wolds: a fwell of confiderable height, covered with a fingularly cold, dark-coloured, clayey foil. The other in the fouthweftern quarter; likewife high land, with a cold retentive fubfoil; but with a lighter more fandy foil. But, the rocky points of the foreft hills apart, the county contains no barren furface: it has not, perhaps, an acre worth lefs than five fhillings; and but few acres worth, on leafe, lefs than ten fhillings an acre. The entire county is not, at the prefent rental value of lands, worth much lefs, on a par, than fifteen to twenty fhillings an acre: an eftimate which, I believe, no other county will bear; RUTLANDSHIRE, perhaps, excepted

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But the part, of this extensive tract, which has engaged a more particular share of attention, is bounded by the TRENT on the north, the TAME on the west, the SOAR on the east, and the ANKER and its banks on the fouth : a district which, for the fertility of its soil, and a spiritedness of management, especially in BREEDING, cannot certainly be equalled in these kingdoms.

The ARABLE MANAGEMENT of the Midland Diftrict is confined within ftill narrower limits. The diftrict, at large, is a grafsland country. Breeding, grazing, and the dairy, prevail in different parts of it. But, in the richeft fineft plot it contains, the four branches of hufbandry are united, and carried on by men of property and abilities.

This district is fituated between the Charnwood hills and the western banks of the Trent, the Tame, and the Anker; including the four points of the counties of LEF-CESTER, WARWICK, STAFFORD, and DER-BY; being feated everyway near the centre of the kingdom.

A more interesting subject of study, for the purpose of the plan I am executing, could

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could not well be conceived; being not more interesting on account of the nature of its fituation, foil and produce, and the repute of its occupiers, than on that of its general management, being peculiar and regular.

This being, fortunately, the DISTRICT of the STATION, and that of whofe ARABLE MANAGEMENT I fhall principally fpeak, it will require an accurate defcription.

The OUTLINE is irregular. The EXTENT may be estimated at one hundred and fifty square miles; or about a hundred thousand acres.

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The CLIMATURE is below the latitude it lies in (about $52^{\circ} 45'$.); its featons are near a fortnight before thole of Eaft Norfolk, which is fituated in a fimilar latitude; and many days earlier than thole of Gloucefterfhire, which enjoys a more fouthern fituation. On the weftern fide of the diftrict, harveft is generally as forward as in Surrey : in 1785, fome oats were cut, and much wheat and barley ripe, the 28th July. What is very obfervable, the feafons on the Tamworth fide of the diftrict are a full week B 3 forwarder forwarder than they are on the Forest fide, only ten or twelve miles distant. But this, perhaps, may be accounted for by the coldness of the base of the Forest hills *.

The SURFACE of this charming plot of country is various. Its general elevation is much greater than that of most middlefoiled districts. Some of its fivells might, in regard to elevation, be deemed upland; yet, in fertility, it is throughout equal to most vale districts.

The soil, in general, is a rich middle loam; interspersed, however, with a few less fertile patches. Toward the soot of the Charnwood hills, much of it is of a more fandy nature; but of a fingularly free and fertile quality. Taking the district of the station, throughout, it ranks, in utility, with the first districts of the island. The fwells, though high, are generally fertile to the fummit; and the dips between, though wide and shat, are sound, and easily freed

* It is observable, that in October 1789, while the beans and much barley remained out, in Berkshire and the surgunding counties, the Midland District, though it lie near a hundred miles farther towards the north, had done harvest a month or fix weeks.

6

from furface water. The entire diffrict, except a few narrow bottoms, and the immediate margins of the rivers, is equally productive of corn and grafs.

The foil of the north of Warwickshire, away from the banks of the Anker, is of a colder less productive quality; west of the Tame a light fandy foil prevails; and Derbyshire, except the fouthern extremity, and the immediate bank of the Trent, is still more of an upland or mountainous nature.

The DISTRICT of the STATION therefore, confidered with regard to foil, might be termed a bay of the MIDLAND DISTRICT, into which it opens on the fouth-weft; its management being traceable as far as the banks of the Soar above Leicefter; gradually affimilating with the more grazing parts of Leicefterfhire.

The subsoil prevalent in this difficit is a red clay (provincially "marl"), refembling the red foils of Herefordshire and Nottinghamshire. In some places a concrete fand, increasing in hardness with the depth to a soft gritstone, occurs in different parts; and a fandy loam, or brick earth, mixed B₄ with

17

with veins of fand and gravel, is a pretty common fubfoil.

The ROADS, through the nature of the foil and fubftrata, are necessfarily bad. But of these hereafter.

INCLOSURE. Thirty years ago, much of this diftrict was in an open flate; and fome townships still remain open: there are others, however, which appear to have been long in a state of inclosure; and in which, no doubt, the present system of management originated.

The **PRODUCE** of this diffrict, as has been intimated, is chiefly corn and grafs; little, very little *woodland* within it. It is, however, furrounded on almost every fide with well wooded tracts,

In the light of ORNAMENT, the MID-LAND DISTRICT, viewed generally, and in its prefent state, is much inferior to the northern and western quarters of the island. The views are frequently pleasing, through the variety of surface and richness of foil, but are seldom pictures que, unless when the Charnwood hills enter within them. The district, in a general point of view, discovers a tame,

MIDLAND COUNTIES.

a tamenefs; a kind of still life; which, however, clothed as it is, in the verdure and richness of herbage, renders this district de. firable as a place of refidence; though, at prefent, it is not striking to the mere traveller. Neverthelefs, were the billowy fwells of Northamptonshire and south Leicestershire as well wooded as those of Herefordfhire and Kent, they would, in beauty, be inferior to neither of those counties. The furface of Northamptonshire is broken in a manner, which renders it fingularly fusceptible of ornament: and, at prefent, the BANKS of the TRENT, especially about Nor-TINGHAM (fingularly fine fituation!) are as beautiful as ground wood and water can make them.

The DISTRICT of the STATION has still greater natural advantages : it is in a manner furrounded with what the landscape painter would call good distances. The Charnwood hills, the Derbyshire mountains, Needwood Forest, the Beaudesert hills, and other hills of Staffordshire; and, in some situations, the Lickey, the Clent hills, and the more prominent hills of Shropshire, may be caught.

Nor

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Nor is it, at prefent, defitute of internal beauty. The BANKS of the TAME afford fome beautiful fubjects of landscape; and a lovely plot round HINTS, weftward of the Tame, is in the best style of Kent or Herefordshire. The situation of TAMWORTH*, for the richness and beauty of the country round it, is one of the finest in the kingdom.

The CHARNWOOD HILLS are too ftriking a feature of the Midland Diftrict to be paffed without efpecial notice. Like the Malvern hills, their ftyle is fingular; but the ftyle of one is very different from that of the other. The Malvern hills, feen from a diftance, bear a most striking refemblance to the Atlantic Iflands; towering up high and ragged; and, on a near view, appear as one large mountain fragment. The Charnwood hills, on the contrary, feen obscurely, appear as an extensive range of mountains; much larger, and of course much more diftant, than they really are. When approached, the mountain style is still preferved; the prominencies are diffinct, fharp, and most of them

* Formerly the refidence of the Mercian kings,

them pointed with naked ragged rock. One of these prominencies, BARDON HILL, rifes above the reft; and, though far from an elevated fituation, comparatively with the more northern mountains, commands, in much probability, a greater extent of furface, than any other point of view in the ifland.

It is entirely infulated, ftanding every way at a confiderable diffance from lands equally high. The horizon appears to rife almost equally on every fide: it is quite an ocean view, from a fhip out of fight of land; at least more fo, than any other land view I have feen.

The Midland Diftrict is almost every acre of it feen lying at its feet. Lincoln cathedral, at the diftance of near fixty miles, makes a prominent object from it. With a good glass, the Dunstable hills, at little lefs than eighty miles, may, it is faid, be diftinctly feen. The Malvern hills, Mayhill, and the Sugar Loaf in South Wales, are diftinctly in view. Enville, the Wrekin, and other mountains of Shropshire and North Wales, are equally diftinguishable. And the Derbyshire hills, to the highest peak, appear at hand. hand. An outline, defcribed from the extremities of the views, would include near onefourth of England and Wales. It may be deemed, without rifque, I apprehend, one of the most extraordinary points of view in Nature.

ESTATES,

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ESTATE**S**.

ESTATES, here, are fmall. Fertile diftricts were early cultivated; and, at the Conqueft, the lordships probably were dealt out separately. Nor does there appear to have been, fince their distribution, any accumulation of landed property in the district immediately under survey. It has few principal residences *; nor any off estates, I believe,

• GOPSAL, built and laid out, at the expence of a hundred thousand pounds, by the late Mr. JENNINGS, famous for his friendships to Handel and the Pretender; and BOSWORTH, the seat of Sir WOLSTAN DIXIE; are the only refidences within the district. FISHER-WICK, the princely refidence of the EARL of DONNE-GAL, and a creation of Mr. BROWN, at the expence, probably, of much more than a hundred thoufand pounds, is situated on its northwestern margin; and KIRKEY, the feat of LORD WENTWORTH, on the opposite extremity. lieve, of more than two or three thousand ayear *.

In YEOMANRY, of the higher clafs, the diftrict of the station abounds, in a superior manner. Men cultivating their own estates of two, three, four, or five hundreds ayear, are thickly scattered over almost every part of the district. There is an instance of a man whose lands, in their present high state of cultivation, are not worth less than two thousands ayear, cultivating them, as a yeoman!

What a superior character ! How much more respectable, thus, than clinging, as a minor gentleman, to men of fortune and fashion ! A German prince is probably less respected, in the environs of his residence, than Mr. PRINCEP is, in the neighbourhood of CROXALL.

The TENURE of this diffrict is mostly feefimple; with fome little copyhold; but, I understand, little or no leafehold.

THE

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• Lord STAMFORD's eflate round GROBY, on the fouthern fkirts of the Foreft hills, is more; but little if any of it reaches, properly, within the diffrict of the flation.

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THE

GENERAL MANAGEMENT

O F

ESTATES.

THERE ARE few diffricts in which lefs is to be learnt on the fubject of managing eftates, than in this. The eftates are finall; and the management little more than that of receiving the rents. It will, neverthelefs, be right to take a view of its practice.

MANOR COURTS are pretty generally held; even where the copyhold tenure is extinct; and their utility experienced.

PURCHASE OF LANDS. Some years back, the fame species of frenzy,—*Terramania*, showed itself, here, as it did in other diftricts*. Forty years purchase was, then, not unfrequently given. Now (1785) thirty years

* See YORK. ECON.

years purchafe, on a fair rental value, is effecemed a good price. There are fome recent inftances of lands being fold at twenty years purchafe. But this may be accounted for. At the time these purchafes took place, the interest of the funds was extraordinarily high. By navy and victualling bills, new loans, &c. five or fix percent. was made of money. And this will ever be the case. The *interest* of the funds will always have more or less influence on the price of land. Hence, those who wish to secure lands at a moderate price, should purchase when the funds are advantageous.

TENANCY. Farms, in general, ftill remain at will, and the occupiers, though large and many of them opulent, ftill appear fatisfied with this fpecies of poffeffion : for although eftates have been raifed, the fpirit of over-renting cannot be faid to have yet pervaded the diftrict. Neverthelefs, here, as in most other diftricts, there are men who, through neceffity or avarice, are ftretching their rent-rolls, and in confequence, prudently endeavouring to fecure their rents, and their eftates—as well as they

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can—by agreements and leafes; either for a term, or from year to year. The prevailing form will be given at the close of this article.

For a striking instance of the confidence which still subsists between landlords and tenants, see MIN. 24.

RENT and TITHE. The rent varies, of courfe, with the foil and fituation. Near TOWNS, land lets exceedingly high. Immediately round Tamworth, a confiderable market town, the land, peculiarly rich, lets for three to four pounds an acre. This, however, is in fome measure accounted for in the quantity of garden ground cultivated, here, for the Birmingham market.

Taking the diftrict of the flation throughout, twenty fhillings an acre is, at prefent, the full rent, for inclosed lands. Thirty or forty years ago, the old inclosures, of the best quality, did not let for more than twelve to fifteen shillings: the rife, therefore, has been considerable, but, in general, not excessive. There are small parcels let for twenty-five shillings, and some few much Vol. I. C higher;

U

higher; but, I believe, there is no entire farm of any fize, let at prefent (1785) for more than twenty fhillings an acre, round.

And even at these rents much of the diftrict is TITHE-FREE; or enjoys moduffes for grass land; and where the land is titheable, the tithe is feldom taken in kind. I met with only one instance: "Bosworth Field" by Doctor Taylor.

Formerly, the tithe of fome townships, in this neighbourhood, was taken in kind; under a cuftom or regulation which might, when this difgraceful bufinefs takes place, be univerfally adopted. If the titheman fet up his own fheaves, he took every tenth: but, if the occupier undertook to fet up, only each eleventh! Thus not only a faving of labour; but frequently, no doubt, a faving of produce was obtained. The titheman loft nothing on the whole, and the occupier was a gainer on a certainty.

The rent of tithes varies in this as in other diffricts, with the value of the given land, and the fpecies of its produce. For arable land (little or no fallow), worth twenty

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twenty shillings an acre, five shillings may be confidered, I believe, as the medium rent of the tithe. For grass land, about two shillings. For an entire farm, two-and-sixpence to three shillings an acre.

COVENANTS. By the prevailing cuftom of the country, landlord builds and does extra repairs,—tenant the ordinary repairs of buildings, and takes the fole care of fences; materials being allowed;—with, generally, the liberty of lopping hedgerow timber.

REMOVALS. To the honor of the landed intereft, the removal of tenants has been hitherto little practifed, and of courfe is little underftood. Many of the first farms have descended from father to son, through a series of generations; and some of them, there is great reason to hope, may long continue in the same line of descent.

The time of removal is Ladyday; when, according to the prevailing cuftom of the country, entire pofferfion of an inclosed C 2 farm

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farm • is given by the outgoing to the incoming tenant : even the barns are given up at that time; the outgoer generally carrying off his wheat crop; and fometimes his laft year's manure.

RECEIVING. The cuftomary times of receiving are Michaelmas and Ladyday: the tenant being allowed fix months credit.

Formerly, an extraordinary cuftom has been in ufe, in this quarter of the kingdom; and, by fome old *leafes*, ftill remains in force, in the interior parts of Staffordfhire. Inftead of the landlord giving the tenant fix months credit, the tenant, by this cuftom, agrees to be fix months in advance; covenanting to pay what is called a "FOREHAND RENT;" that is, to pay down the rent prior to the occupancy. In practice, however, the rent is feldom paid until four or fix months after

• In the open field township, the outgoing tenant has what is called " the waygoing crops :"—that is, the wheat and spring corn fown previous to the quitting. after the commencement of the occupation; namely, when it is due or nearly fo. This cuftom was, no doubt, founded on the fecurity of the landlord : and fome extraordinary circumstances, probably, led to its establishment.

FORM OF LEASE. The leafe, from which the following heads are digested, is the only modern leafe I have met with in the district. It is, at prefent (1786), the most prevailing form in use. It contains fome good clauses; but wants many alterations, and feveral additions, to render it a complete form.

LANDLORD AGREES to let, &c. &c. from year to year *.

LANDLORD

* An admirable claufe, fuggested by a man whose extensive and accurate knowledge of rural affairs in all its branches, is fuperior to most men's, has lately been introduced into fome articles of agreement, from year to year, in this district.

The great use of leases, for a term of years, is that of encouraging improvements, and the great objection to letting from year to year is their difcouragement. But if, in the latter cafe, the landlord covenant, as he does in the clause undernotice, to reimburse the tenant, when he quits, for fuch real improvements as he shall make, or the

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LANDLORD RESERVES mines, quarries, &c. &c.

TENANT AGREES to take, &c. and to pay the flipulated rent, "within forty days, without any deduction for taxes;" and double rent fo long as he continues to hold after notice given.

ALSO to repair buildings; accidents by fire excepted.

Also to repair gates and fences.

Also, when required, to "cut and plash the hedges, and make the ditches, three foot by two foot, or pay or cause to be paid to the landlord, &c. one shilling per rood for such as shall not be done after three months notice has been given in writing."

Alsa

the remainder of fuch improvements, at the time of quitting, the objection is, in fome degree at leaft, obviated.

Some difficulty, no doubt, will lie, in afcertaining the quantity of improvement remaining, at the time of quitting. There are, however, men, in every diffrict, who are adequate to the tafk of effimating a matter of this kind, with tolerable accuracy, And it is certainly preferable to rifque the difficulty of fettlement, than to let an effate fuffer for want of due improvement. Also not to lop or top timber trees; NOR to cut hedge thorns, without plashing and ditching.

Also not to part with the poffession to any person or persons (the wife, child or children of the tenant excepted) without licence and consent; under forfeiture of the lease.

ALSO not to break up certain lands fpecified in a fchedule annexed, under 201. an acre.

Also not to plow, &c. more than a fpecified number of acres of the reft of the land " in any one year;" under the fame penalty.

Also to forfeit the fame fum "for every acre that shall be plowed for any longer time than three crops fuccessively, without making a clean fummer fallow thereof after the third crop."

ALSO that at the time of laying down the arable lands to grafs, he shall "manure them with eight quarters of lime an

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acre used in tillage, and lay the fame down in an husbandlike manner, fown with twelve pounds weight of clover feeds, and one strike (or bushel) of rye-grass feeds upon each acre."

Also to fpend on the premifes, in a hufbandlike manner, all the hay, ftraw, and manure; or leave them at the end of the term, for the use of the landlord "or his next tenant :" the outgoing

TENANT being ALLOWED for the hay left on the premises, " at the time of quitting."

Also (provided he quit " at the requeft of the landlord (unlefs for the breaking of thefe articles) and peaceably and quietly yield and deliver up pofferfion") " for all fuch clover and rye-grafs as fhall be fown in any time in the laft year."

ALSO for fuch lime as he "fhall caufe to be expended upon the premifes, within twelve months before the time he quits."

Also "for all fallows made within that time." These several allowances to be settled by referees.

MUTUALLY

MUTUALLY AGREE that " without any new agreement in writing being made concerning the fame, all and every of the covenants, claufes and agreements, herein contained shall be obligatory on each of the faid parties hereto, and their representatives."

For conversation on tenancy, see MIN. 24.

For a caution to extraparochial owners and occupiers, fee MIN. 33.

For a proposed clause against slovenlipess, see MIN. 76.

FARM

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3.

FARM

BUILDINGS.

THE FARM BUILDINGS of this diftrict are many of them large, fubftantial, and commodious; and have feveral particulars belonging to them, that require attention.

The MATERIALS of the diffrict are thefe. The walling material almost wholly brick. The timber mostly oak, of which the builders are still lavish. The covering material, formerly thatch; now, principally, in this district, knobbed plain tiles; but, in Leicestershire, mostly blue slate*. Ground flooring,

* BLUE SLATES. These are raised near Swythland-provincially "Swidland"- on the fouthern skirts of the Charnwood hills; where an immense excavation has, within the last fifty years, been made.

Superficial

flooring, mostly paving bricks. Chamber flooring, oak, elm, or plaister: the two last are now most common in farm houses: in this, an inland country, deal has not hitherto been much in use; but even here, it is now becoming the fashionable material.

The CEMENT of this diffrict is entitled to particular notice. In common flucco, plaister floors and water-tight walls the midland counties excel; but in the last most especially. Water cisterns are frequently formed by a nine inch brick wall, standing naked above ground; yet as tight as a stone trough !

Some-

Superficial quarries have been worked, time immemorial; but their produce was of a coarse quality, compared with those which are now raised; some of which are nearly equal to the Westmoreland flate.

They are raifed in blocks, blafted from an almost feamless rock. The blocks are first cleft into flabs; and the flabs afterward into flates; or, if too flrong and coarse for this purpose, are thrown as a coarse flags, for various uses. Out of the larger blocks, chimney pieces and tombstones are cut.

The fame kind of blue rock is found in different parts of the Foreft hills; but none, yet, which affords flates equal in quality to the "SWIDLAND SLATES." Something depends on management, in forming these walls: but much more on the nature of the LIME with which they are built. There is only one fort with which they can be rendered tight with certainty. This is the BARROW LIME, which not only fets with extraordinary hardness, but remains invulnerable to the elements; fetting water, drought, and frost at defiance *.

The

* BARROW LIME. Barrow, fituated on the banks of the Soar, nearly opposite to Mountfoarhill, in Lei, ceftershire, has long been celebrated for its lime.

It is an interesting fact, that the stone, from which the Barrow lime is burnt, is, in colour, texture, and quality of component parts, the same as the *Claystone* of *Glocester/bire*, from which the strong lime of that diftrict is burnt; and what is still more remarkable, it is found in similar situations and deposited in thin strata divided by thicker seams of calcarious clay, in the very same manner, in which the claystone of Glocestersshire is found. See GLO. ECON. vol. i. p. 13. 15. and 32.

One hundred grains of the *flone* contain eightyfix grains of calcarious matter; affording fourteen grains of an impalpable tenacious filt, which feems to be poffefted

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The only preparation, of this extraordinary cement, is that of washing the fand, and affimilating it intimately with the lime, by beating; and the only judgement requisite in using it, is to hurry it into the wall as quickly as possible from the kiln.

The FARMERIES of this diffrict, as has been intimated, are fome of them on a large fcale. That of Dunnimeer, in this neighbourhood, is the most extravagant fuite of farm buildings I remember to have feen.

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feffed of fome fingular properties; forming a fubject well entitled to future enquiry.

One hundred grains of the *clay* contain fortyfix grains of calcarious matter, leaving fiftyfour grains of refiduum, a fine clay.

Hence this earth, which at prefent lies an encumbrance in the quarries, is richer in calcariofity than the CLAY MARL of the Fleg hundreds of Norfolk, with which very valuable improvements are made. See NORF. ECON. vol. i. p. 22.

Since writing this article, I have observed, in the VALE of BELVOIR, at the northernmost point of Leicesterschire, a similar stone, situated in a sumilar manper, and producing a similar kind of lime.

The only thing noticeable in the BARN of this diffrict is an improvement, lately introduced I believe, in the means of fupporting the roof. Inftead of beams and principals, *partial partition walls* are raifed, on either fide the floor and between the bays, to take the purlines; leaving an opening, or large doorway, in the middle of the building, to admit the corn.

In a capital barn, where two pair of purlines were neceffary, the cheeks of walling are narrow; not more than five feet wide; receiving the lower purlines only; with fhort beams and principals, refting on the tops of the cheeks or partial partition walls, to fupport the upper ones.

This mode of conftruction is cheaper than oak beams; takes the weight of the roof in a great measure off the fide walls; and frees the body of the barn from beams (well known nuisances in filling a barn); yet stiffens the building. On each fide the floor, these partial partitions are evidently eligible, on these and various other accounts; without any evident difadvantage.

Barn

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BARN FLOORS. In this diffrict, a peculiar method of *laying wooden barn floors* is in practice. Inftead of the planks being nailed down to fleepers, in the ordinary way, the floor is firft laid with bricks, and the planks fpread over these, with no other confinement than that of being "dowled" together (that is plowed and tongued) and their ends let into fills or walls, placed in the usual way, on each fide the floor.

By this method of putting down the planks; provided the brickwork be left truly level; vermin cannot have a hiding place beneath them; and a communication of damp air being effectually prevented, floors thus laid are found to wear better, than those laid upon fleepers. It is observable, that the planks, for this method of laying, ought to be thoroughly feasoned.

For the method of laying barn floors with bricks, fee MIN. 14.

In this diffrict, I met with a ftriking inftance of the impropriety of laying barn floors with over-grown oak. A floor laid

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laid with plank cut out of the stem of an aged tree, but which, at the time of laying, appeared to the eye perfectly found, was beaten to pieces in a few years. Barn floors require youthful, ftout, ftronggrained wood.

In the STABLES of this district I have feen nothing remarkable; except that the manger is fometimes of brick.

The modern cowshep of the Midland District, more especially I believe of the District of the Station, is built on an expenfive plan; being furnished not only with a gangway before the heads of the cattle, and mangers for dry meat, but alfo with water troughs, on a principle fimilar to that on which the ftill more extravagant fatting stalls of Glocestershire are built *. But with this difference, that instead of each bullock having a separate stall, divided from the reft, by whole partitions reaching across the shed, the cows, here, ftand in pairs, with only a partial, but beautifully fimple division-provincially a " boofing"-between each pair.

* See GLO. ECON.

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MIDLAND COUNTIES.

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This division confifts of an upright poft, fet in the front of the manger, or between the troughs, with an arm, natural or artificial, fpringing near the ground, and rifing to the fame height as the poft; forming together the upper part of the letter K, ftiffened by flots or bars, running through the two pieces. The cattle are fastened by chains, paffing round the necks, and playing, by means of rings, upon "ftakes" fixed to the fides of the partition pofts.

By this admirable contrivance, the cattle are prevented from goring each other, as effectually as if they were divided by whole partitions; while they have the entire platform, from end to end of the fhed, as free to reft on, as if there were no guards between them *.

The

• In the fheds of a fuperior manager, however, I have feen a different method of conftructing thefe partial partitions; which, inftead of the triangular form defcribed above, are formed by two posts placed upright, or nearly fo; the partitions being nearly the fame breadth (about eighteen inches) at top and bottom; having found that the cows, when lying down, are liable to get their heads (frequently turned back in that Vol. I. D posture)

34 FARM BUILDINGS.

The old FARM-YARDS of this diffrict are principally open; with mangers round the infide of the fences; and with cribs in the areas: fometimes with hovels inclosed by flabs *fet upright*, or tall fagots closely woven together. In the commonfield townships, here, as in the more northern provinces, bean stacks are still not unfrequently placed on these hovels, as temporary winter roofs. A species of farm building, this, which I apprehend was formerly most prevalent; but which, in a few years, will probably be forgot.

In an open yard, belonging to one of the first managers of the district, I faw a DRINK-ING CISTERN on an admirable plan. It is formed by a watertight wall, raifed high enough above ground to prevent the cattle from stepping into it, and low enough to let them

posture) beneath the common boosings, thereby subjecting themselves to a degree of danger; and finds that a partition, eighteen inches deep, does not prevent them from occupying the whole platform. Besides, these upright guards may be beneficial in preventing their encroaching on each other's room, as they are sometimes apt to do with the triangular guards.

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them drink freely. The brickwork, which forms a ciftern about four feet square, is guarded by a post at each corner, with rails passing from post to post, over which rails the cattle drink. It is fed by a covered pipe (of pipe bricks) reaching to a large drinking pool, at fome diftance from the yard; fo that while this is full (which it is in winter) the ciftern is fo likewife to the brim. If it overflow (which it generally does at that feafon) a wafte-water pipe conveys the furplus out of the yard.

Cifterns of this kind, when they can be formed at an easy expence, are much preferable to pits, in farm yards.

A long TROUGH, by the fide of a fence. and guarded by a rail, would, under these circumstances, be still better than a cistern.

In fome few "RICK YARDS" of this diftrict, a stackguard, of a peculiar kind, is noticeable. It confifts, fimply, of a circular parapet wall, of brickwork, two to three feet high; with a coping projecting on the outfide, to prevent vermin from climbing up; and with the area, or floor, on the infide, laid fecurely with brick (on a level with the D 2 ground ground on the outfide) to prevent their undermining; as well as to keep the bottom of the rick perfectly dry.

REFERENCES to the MINUTES ON FARM BUILDINGS.

For an evidence that every *bogfty* fhould have a rubbing-poft, fee MIN. 4.

For the operation of laying *barn floors* with bricks, fee MIN. 14.

For the improvement of Statfold farmery, fee MIN. 25.

For observations on cattle sheds, see MIN. 28.

For the operation of charing posts, fee MIN. 29.

For evidences that a lobby is requisite to a farmery, see MIN. 112.

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ROADS.

MIDLAND COUNTIES.

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4.

ROADS.

IN A DEEPSOILED DISTRICT, deftitute, in a manner, of hard materials, as this has been already reprefented, bad roads are in a degree excufable. Yet there are few diftricts, perhaps, in which genius and industry might not construct tolerable roads, at a moderate expence.

The roads of this diffrict had probably remained in a state of almost total neglect, from the days of the Mercians, until fome twenty years back; when a spirit of improvement went forth. Its principal road, from Tamworth to Ashby, lay in a state almost impaffable, feveral months in the year. Statfold Lane had long been proverbial. In winter it was unfrequented; the riding and driftways, at least, being on trespass, thro the adjoining inclosures. Waggons were dragged on their bellies through it: to a D 3. coach

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coach it was impassible during the winter months: and might ftill have lain in that state, had not a material been applied to its amendment, which is feldom used in that intention: namely, SAND: a material which had been neglected in this case; though it was lodged, in sufficient abundance, in a part of the very road which, century after century, had lain in fo deplorable a state.

In this inftance, the bafe of the lane being levelled, the fand was laid on, eighteen inches to two feet or more thick, according to the nature of the bottom, on which it was laid,

This circumstance I mention for the use of townships that have fand, and no better material, in their neighbourhoods. And, having introduced the subject, it may be proper to make some remarks on the method of making SAND ROADS.

The prevailing error, which has crept into the modern method of forming roads, is that of raifing them too high in the middle. (See YORK ECON.) But, here, the opposite extreme is prevalent.

The FORM of a made road, here, is that of a trough. The fite of the road being marked marked out, a mound of earth, provincially a "butment," is raifed on either fide; and, the bottom of the trough being levelled, the hard materials are fpread evenly over it; leaving the furface of the road as flat as a floor *.

The effect of forming a SAND ROAD in this manner, especially where the foil is retentive as in this country, 'is, the trough retaining the water of heavy rains, the fand, inftead of being hardened and rendered firm, as in its nature it is liable to be by heavy rains, is formed into a grout with the water; horfes wading, perhaps, halfway up to their knees in puddle; just as they would do in any other large trough filled with fand and water. After a great fall of rain, I have feen the dips of the road covered with large fheets of water, which lay there as they would in the bed of a river, until the roadman came with his hoe and his fpade to open his "lets;" which in the dips of a fandy road are prefently warped up; while the flopes D 4 are

• A more modern method of forming a road is that of raifing two broad banks, dipping inward, or outward, or left with a flat furface, according to the *judgement* of the former; leaving a trough, three or four yards wide, between them; in which trough the hard materials are deposited,

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first retain a principal part of the water which falls upon them, and are worn into inequality by rain water *flanding* upon them; while the latter are worn into inequalities, by the water of heavy rains *running* upon them.

To obviate these inconveniences, art and industry have been employed, during the present century at least, in rounding the former into the *barrel* or *convex* form, that the water which falls on them may have an opportunity of escaping; and, of course, that their surfaces may not be injured by *stagnant* water: and in moulding the latter into the fame form, that their surfaces may not be worn into inequalities by *currents* of water.

By adhering uniformly to this felfevident principle, the *floughs* of the former, and the *gutters* of the latter, are effectually doneaway, and, with due care, for ever prevented from returning: the entire furface, while this principle is adhered to, being fmooth and even, yet free from hardnefs: of courfe, fafe and pleafant to the traveller.

Formerly, in the rutty roads and hollow ways of our ancestors, it was a week or a fortnight's journey from York to London; now, now, the road being moulded and kept up, agreeably to the foregoing principle, it may be travelled in a day.

Neverthelefs, the principle now under examination is directly opposite to that defcribed.

By this principle round roads are reverfed, and flat ones fcooped into the concave or bollow form; the hollownefs being preferved equally on level ground, and on the face of the fteepeft hills; the entire road, from end to end, being formed into a trough, to catch the water which falls in it: not, however, with any *intention* of impeding the pace of travellers, or of reducing roads to their antient ftate, but under an idea of "*cuafhing*" them.

The advantages held out, as arifing from this principle of roadmaking, are those of freeing the road from dirt, in wet weather, and dust, in dry; and one which is still more valuable, that of faving expence in the repairing of roads: these advantages being held out as accruing in ALL SITU-ATIONS: the principle being likewise extended to ALL MATERIALS.

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To examine this principle fully, it will be neceffary to try the effect of water on roads of every material, and in every fituation.

The MATERIALS of roads are fand, loofe gravel, binding gravel, flint and chalk, and ftones of various forts *, laid on loofe; and ftones fet regularly as a pavement.

The SITUATIONS of roads may be reduced to a *level* at the bottom of a hill—a gentle *flope*—a *bill*—and a *level* at the top of a hill : or, in other words, a *dip*, a *flope*, a *fleep*, a *plain*.

To give full effect to the principle, we will fuppofe a polifhed marble pavement extended acrofs a varied furface, including those four fites or fituations; the furface of the pavement being fo moulded that the outer margins may be nearly flat, but somewhat diffing inward, with a shallow trough or hollow in the middle, some three or four yards wide: this being the required form; if any settled form be really fixed; of a "washway road."

Suppose a thunder shower to fall on this road; the effect need not be explained: the marging

• Also the scoria of metals; cinders of different kinds; burnt clay, and other factitious materials. margins would collect the rain water and throw it into the center, where a current would be fpread over the hollow, and carry away with it the duft which might be lodged upon it; and, after the fhower, even the dips and plains, *if exactly formed*, and having proper outlets for the water, would, with a few minutes fun and wind, become perfectly dry and clean: and, under this fuppolition, a drizzling rain would have a fimilar effect.

Suppose this polished road, formed with mathematical truth, to be covered with two or three inches deep of gravel, fand, and mud; fuch as all roads are more or less coyered with; and to be cut irregularly into ruts, by wheel carriages, as all carriage roads are more or less liable to be cut.

Suppose a gentle friendly *zvater/pout* to fteer its course along this road, filling its cavity without deranging its base; the evident consequence would be, the steeps and slopes would be washed clean; the dips would receive an addition of the best materials; and the plains be loaded with puddle.

A thunder shower on fuch a road would have this effect : the fuillage on the steeps and flopes being faturated, the water would begin

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begin to trickle down the ruts; as the current increased, the first channel, no matter what direction it happened to take, whether down a straight rut, or a zigzag from hollow to hollow, would be widened; every moment drawing more and more water into it, until the *rut* were augmented to a *rill*; down which the torrent would pour; driving the fand and gravel into heaps and eddies, and carrying down the mud, with part of the fand and gravel, into the nearest receptacle; leaving the steeps and slopes with rough irregular surfaces; the dips, in this, as in the former case, receiving an addition of materials; and the plains, as before, retaining their own puddles

A drizzling rain would reduce the materials on the fteeps and flopes to a ftate of mortar; those on the dips and plains to that of puddle.

Reverse this marble road; changing its furface from the *concave* or *bollow*, to the *convex* or *round* form; and cover it with loofe materials as before.

The waterfpout would not leave a fpeck upon its furface; would wash it clean from end to end; having nearly the same effect in every situation.

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The thunder shower would be injurious on the steeps, in proportion to the degree of convexity : the rounder the form, the fooner the current would escape to the fides, and the lefs injury, of courfe, the face of the road would receive. On the flopes the effect would be fimilar, but in a lefs degree. On the dips and plains, the current being immediately from the crown to the fides, would carry off the mud, in innumerable channels, leaving the gravel and fand undifturbed on the face of the road.

The drizzling rain would act fomewhat fimilarly, in this, as in the other cafe; with, however, this difference ;---on a round furface, the fullage could never get beyond the state of mortar; which if required might be eafily thrust dozon to the fides; while in a hollow it would foon take the state of puddle, which nothing but a scoop could raife.

These being the effects of rain water on roads formed with mathematical exactness, its effects on roads worn into inequalities, as all public roads, in the nature of wheel carriages, unavoidably are, may be eafily conceived:

ceived; even by those who have not seen the effect in practice.

In theory, a flat road with a hollow in the middle, may be plaufible. Could the hollow be kept fmooth as with a plane, and a fufficient body of water could be had, at will, to cover, or fill the hollow, at once, and could be made to run with an even current, along a plain and down a fteep, whenever the road might want wafhing, its effect, no doubt, would be that of *cleaning* the hollow : the evident effect of which would be, a binding gravel would be rendered hard, a loofe gravel ftill loofer *, and a rough ftone road ftill rougher.

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• In this diffrict, I obferved a firiking inflance of this effect. A road up a bold alcent, being of this material, and lying, by accident or defigu, in the hollow form, had been washed, by a fucceffion of rains, to a bed of clean fand and gravel; which, by a few weeks dry weather and continued draught, had been loofened fome inches below the furface. The confequence was, when I faw it, the horses were drawing, or rather foraping, to their footlocks in loose flippery materials, unable without difficulty to find any firm foothold; while the refisfance of fuch a bed of loose fand, and gravel, to the wheels, requires no explanation.

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MIDLAND COUNTIES.

But in practice, it is impossible to keep a public road in that state, nor can a body of water be had at command, to be let loofe upon it in a moment *; nor, in its nature, will water run brifkly along a plain, or gently down a hill. The clouds alone could give the uncertain fupply; and the effect of rain-water on roads has been explained : the ruts and hollows of a level are filled with standing water; the evil effects of which, though but an inch deep, are evident; while those of a steep, by drawing the current through them, are worn still wider and deeper : fand is torn into gullies : loofe gravel driven into heaps: binding gravel worn into channels; and ftone roads fcooped into hollows, feparated by ridges of naked ftone.

Where a ftrong current of water is collected, whether on a fteep or on a more gentle flope,

* In fome few fituations, water might be pent up in refervoirs, and be let loofe fuddenly upon a road; but fituations in general will not admit of any fuch expedient.

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flope, and whether the material be ftone or coarfebinding gravel, the road, even fuppofing the water to be fpread over it evenly, is neceffarily rendered a rough irregular pavement, firewed with loofe ftones; which, or the points of faft ones, are the only furface left for the travelling animals to tread on. To a ftumbling horfe, fuch a road is of courfe dangerous; to a thin-footed horfe, painful; and, to an ox, it may be faid to be impaffable: yet there are men who are at once advocates for working oxen, and advocates for wafhway roads!

The unfafencis and impleatantnefs of hollow roads being evident (to my mind at leaft), the idea of their being lefs expenfive than round roads remains to be examined.

The most perfect state of a road; that in which it is the fafest and pleafantest to the traveller, and in which its wear is the least; confequently that in which it is the least expensive to its supporter;—is the state in which the interstices of the hard materials are filled up level with loose matter, as simall gravel, fand, &c. giving a smooth even

even furface; foft and elastic to the hoof; yet firm enough to refift the wheels, without being cut into ruts, and fufficiently *covered* to prevent the hard materials from being exposed to their immediate preffure.

Suppose a trough road to be in this defirable state; and suppose a heavy rain to fall, and a ftrong current to be fpread theoretically, that is evenly, over the bottom of the trough; the effect requires no explanation : the interstitial matter would of course be more or less washed out ; and the points of the hard materials be exposed to the nail, and the hoof exposed to them; and in this unpleasant and unprofitable ftate it must of course remain, until the furface of the hard materials be ground down, to fill up the interflices : which done, and the road made travellable, and fecure from exceffive injury, another fall of rain takes place : another inch of hard materials is of course worn down: and thus, inch after inch, until the earthy foundation be reached. A more ingenious method of wearing away a road, could not readily be conceived : excepting that of wearing the flopes E 2

flopes partially with running water, and the plains partially with flanding water; both of which are unavoidably effected, and in the fullest manner, by forming roads on the principle now under examination.

The impropriety of generalizing hollow roads being too evident to admit of farther examination, let us endeavour to afcertain the particular circumflances, under which they can properly be rendered ufeful. It is not probable, that men of ftrong natural abilities, and in a found ftate of mind, fhould attach themfelves to error, without fome fhow of truth to lead them to it *.

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⁴ The advocates of the principle under examination are not the only roadmakers who have been led into error in the forming of roads. Some twenty years ago, the road between London and Hackney (about three miles, nearly on a dead level) was altered at an exceffive coft, from the *barrel* to the *wave* form : under an idea that, by throwing a number of ridges across the road, instead of one ridge lengthway of it, the ruts, instead of preventing in fome degree the encrease of the water, would conduct it off the road. But experience proving, that, besides the natural length of the road being by this form encreased, and the draft along

4 MIDLAND COUNTIES.

The most striking good effect of washways is that of covering a level road at the foot of a high hill, with fand and small gravel, brought down the descent by heavy rains; and this most especially when a constant rill happens to spread over it, and carry away the foil; leaving nothing but the harder particles *.

Another good effect of running water is on a fhort and gentle flope, where the natural foundation of the road—the natural fubfoil—happens to be of gravel, or other hard material. In this cafe, a current of water, by carrying away the foil which is generally mixed, in greater or lefs proportions, among fuch a fubfoil,—as it rifes to the furface, keeps fuch a road in perpetual repair with little affiftance of art.

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But

along it being rendered uneven, and of courle difficult, the dips became mere receptacles of dirt and puddle; this road, after having had a fair trial, was, at another exceflive expence, re-altered to the barrel form.

* The most *refined* use that road water could, perhaps, be put to, would be that of conveying it down by the fides of a round road, and spreading it over a flat at the bottom of a slope. But even these uses of running water, confined as they are to a few fituations*, are ill adapted to *public* roads: the flats, during a continuance of drizzling or even moderate rains, are liable to be loaded with dirt; a rill, not once in a thousand instances, being at hand to keep them free; and the flopes are liable to be ftrewed with loose ftones, and worn into inequalities by the *sport* of running water.

A public road; more especially a toll road; ought to be free from obstructions in all feasons:

* With respect to the idea held out, that every foil and fituation affords " a fomething," of which running water will make a road, it is much too wild to give chace That foils, in general, if worn long enough, that to. is deep enough, would on a gentle flope afford a fomething to bear a borfe or other animal, may be true; -for although a horfe path may be poached in wet weather; yet, in dry, it is, as will be shown, trod level, again, to receive, with benefit, the water of heavy fhowers :- but not one foil or fituation in a hundred is capable of affording hard materials fufficient to bear the wheels of loaden carriages; which, as will be fhown, tending, not to fill up and level, but to deepen, the holes and gutters made by running water, act in concert with it to render the road impassable,

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feafons: and may with common care be kept in that defirable state, except after a long continuance of moderate rain; when the levels, let them be formed as they may, unlefs they be raifed inconveniently round, and unless the materials be of uncommon hardness, will become loaded with dirt; which, as an obstruction to the traveller, and as tending, like standing water, to keep the road in a flate of foftnefs, and of courfe in a state of extraordinary wear, ought to be removed : not, however, with fo unmanageable an inftrument as water, which cannot be brought to all in level fituations (the feet of hills excepted), but from hollow roads with fcoops, and from round ones with scrapers; which tend, not to make the road unfafe or unpleafant, but to put it, as nearly as its general state of repair will admit, into the required state of perfection.

With refpect to private and by roads, in which carriages never travel abreaft and feldom meet each other, and on which the beafts of draft are always drawn finglethere appears to be only one right method of '

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of forming them; most especially where materials are scarce.

The principle had long ftruck me forcibly in theory, before I faw it carried into practice, in the Midland Diftrict.

On this principle, three lines of hard materials conftitute the road : a middle path for the horfes, with one on each fide for the wheels.

In forming a road on this principle, the middle path is fet out, by a line, or otherwife, as circumftances require, and the fod being removed, a carriage is drawn along, by horfes walking in this path; the wheels of courfe marking out the middle of the two outer paths. Three trenches are then dug, of widths and to depths proportioned to the quantity of materials intended to be expended; leaving the paths, on filling in the materials, an inch or two below the adjoining furface *.

This

* A PRIVATE ROAD, for horfes drawing double, requires to have the entire fpace between the wheel paths cleared from the natural foil, and filled up within a few inches of the furface, with hard materials. In this cafe, the collection of water may, on a long flope, be too

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This method of forming WAGGON PATHS, aptly fuggefts a fimple HORSE PATH, or bridle road: and the Midland Diftrict furnishes instances of horse paths being formed on this principle: indeed, it appears to have been, formerly, the Leicestershire method of forming horse paths by the fide of public roads:—answering the aukward causeways of other districts.

Between Bofworth and Leicefter are ftill the remains of one of thefe paths; which, in the parts where it is tolerably perfect, is, by much, the fafeft and most pleafant horfe

too great to be fuffered to accumulate into one current, and, in fuch a fituation, a road, even of this narrow width, ought to be laid round, or to have outlets for the water, at flated diffances, on the face of the flope. But these outlets require a channel and dam across the road, to stop the descent of the current; than which nothing is more dangerous and disagreeable, especially to carriages: yet this is the expedient held out by the advocates of hollow public roads; on which, being wide, and the quantity of water collected great in proportion, these ditches and banks would require to be so deep (to preferve the road from greater injury), that each fleep would become a flaircase !

horfe path by the fide of a carriage road, I have travelled upon. A lady would canter along it with the utmost confidence^{*}. As the lines of turf on the fides encroach upon it, they are shaved off, and the path kept free and sufficiently wide.

These paths are less liable to be incommoded with dirt than theory may suggest. The slopes are washed by heavy rains; and the dips, if proper outlets be opened into the ditches, which generally run by the fides of them, may be kept sufficiently free from water.

Thus, it is more than probable, the good effect of flat horfe paths, funk a few inches below the furface, led to the idea of carriage paths, and thefe to flat

• How much preferable to the high, gawky, flippery, breakneck *canfevenys* of other diffricts! Thefe caufeways however, which were probably intended to accommodate foot paffengers as well as horfes, are, or rather were, flriking evidences of the efficacy of heavy rains in wafhing convex furfaces; for being narrow and without ruts to impede the defeent, they were in general kept perfectly clean: much too clean; either for eafe or fafety intravelling.

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flat carriage roads, with "butments" on their fides, agreeably to the practice of this diffrict.

Be this as it may, flat horfe paths are produced, in argument, as evidences in favor of flat carriage roads : a ftriking evidence, this, of the danger of generalizing ideas without due examination.

The effects of rain water, on narrow horfe paths and on wide carriage roads, are very different. The quantity collected on the former is not capable of injuring the flopes, and readily finds its way off the levels: it has but a few inches to run to the outlet; with not a fingle lateral rut to impede its efcape: while the flopes of the latter are injured by the accumulated current, and the levels unavoidably incommoded with ftanding water, which, from the middle of a flat or hollow road, hrs fome yards to run, acrofs ruts and ridges, before it can find the outlet.

Befide, the effect of the feet of horfes and that of the wheels of carriages are diffimilar as light and darknefs, or right and wrong: the one tends to level the furface of

of a road, the other to wear it into inequalities.

The human foot, by constant treading, tends to render a path, free from hard protuberances, perfectly fmooth and level: by ftepping on the higher parts, the wear and the preffure both tend to lower them, and to fill up the hollows be-The foot of a horse has a similar tween. tendency: a horfe which has the use of his limbs will not, if he can avoid it, fet his foot in a hole, but treads on its margin *; by which means hollows, and more efpecially narrow channels, are filled up. Thus we frequently fee, at the foot of a long flope, a horfe path, as the middle track of a waggon path in a by road, worn, in the morning, by a heavy fall of rain in the night, into a narrow channel, generally in the

* I fpeak of holes which may be avoided in roads of hard materials; not of SLOUGHS of clayey lanes; which, being too wide to be avoided, are of courfe waded through, and, in proportion to the quantity of dirt brought out by the feet and legs of the travelling animals, are rendered deeper and wider by ufe.

the middle of the path; which, however, in the evening, if the traffic be great, we find entirely done away; the path being left fmooth and level; or more ufually fomewhat hollow; but with a regular concavity; in the very form for which the advocates of hollow roads contend: and if water were poured upon it in quantity, it would fpread itself over its furface; which being rendered firm and fmooth, or nearly fo, by the feet of the horfes, the water, if not too rapid, nor continued upon it too long, would tend to render it still firmer and fmoother; carrying off the foil which lay on the furface merely; leaving the fand and gravel in their places; acting in the very manner held out by the advocates for hollow roads.

To afcertain, in the fulleft manner, the effects of wheel carriages on a road, it will be neceffary to adjust its furface and roll it, until the loofe matter covering the hard materials be fmooth and firm.

The first effect of a carriage, passing along such a road, is that of making a longitudinal impression or rut, of a depth proportioned

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portioned to the quantity quality and flate of the covering matter, to the breadth of the wheels, and the weight of the load they bear, raifing up a ridge or comb of the loofe matter, and leaving it flanding, light and porous, on either fide of the rut. Another carriage paffing nearly, but not exactly, in the fame track, another rut is formed, and other ridges of loofe matter forced up; or perhaps a line of the covering two or three inches wide, between the ruts, loofened and raifed up from its firm fmooth flate.

By a continuance of wear, the furface of the hard materials is reached, and worn away: not, however, evenly, as a long broad-footed fledge paffing along the furface would wear them; but, according to the nature of wheel carriages, in ruts and hollows: it being out of the power of art to render every part of a road equally firm; and not at all probable that the wheels of carriages paffing upon it fhould wear every part of its furface exactly alike.

By the laws of gravitation and the action of wheel carriages, holes once begun in the furface of a road, no matter by what agent, inftead inftead of being made lefs, as those of a path are by the feet of animals, are made deeper every time the wheel of a carriage paffes through them. The periphery of the wheel acts as a chiffel, which in falling into the hollow receives an impetus or acquired force, in addition to the actual prefiure it is loaded with; and, in addition to this, an undue proportion of the general load is, of courfe, by placing it out of its upright polture, taken from the upper and thrown upon the lower wheeli: See YORX. ECON.

Hence, the fact naturally arifes, though not perhaps fufficiently attended to by road furveyors, that HARD PROFUBERANCES, befide being dangerous and difagreeable to travellers, whether on horfeback or in carriages, are injurious to roads.

Every hard protuberance, as the point of a ftone ftanding above the general furface of the road, is, in the nature of wheel carriages and the laws of gravitation, productive of four indentures or holes: two, by throwing an additional weight on the opposite wheel (paffing both ways); and two more by the impetus or additional force given by the wheel wheel (passing both ways) in falling on the common furface of the road.

And hence it becomes as indifpenfably neceffary, to common good management, to lower protuberances, as it is to fill up indentures: to pick out or break down with a hammer (a work of little expence) ftones or other obstructions; as to fill up the ruts and holes with additional materials.

The effect of the feet of *horfes drawing in* carriages, varies with the degree of exertion in draft. In light carriages the effect is nearly the fame as that of faddle horfes, and of courfe tends to remedy, in fome degree, the ill'effect of the wheels. But when much exertion is required, the feet of draft horfes tend to tear up, loofen, and make rough, rather than to render firm and fmooth, the furface of the road.

Hence upon the whole we may venture to conclude, that the effects of water on a horfe path and upon a carriage road, are as widely different, as are the effects of the wheels of carriages, and the feet of faddle horfes. Water running down the flopes of a carriage road worn as defcribed; is, by the well 4

well known laws of running water, drawn through the channels and hollows; acting in concert with the wheels, in making them wider and deeper; forming, by a continuance of wear, a rill, or perhaps two or three rills, on the face of the road; while the reft of its furface is loaded with loofe matter, on which the *current*, arifing from ordinary rains, and in ordinary fituations, has no power of action; or, where the rills approach near each other, is left in narrow rough ridges, moft inconvenient to the traveller.

To give full fcope to the united action of wheel carriages and running water, on the face of a wide carriage road, we will fuppofe it to remain in a ftate of neglect.

The effects, which would neceffarily follow, fcarcely need to be particularized. The wheels and the water operating jointly to render its furface more and more uneven, the breaking of horfes' knees and men's necks, the crushing of wheels and axles, the overturning of <u>utter</u> carriages, and, at length, the utter impassibility of the road, would be the inevitable confequences.

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Even running water, without the affiftance of wheel carriages, is capable of producing the final effect; and in no great length of time; as is proved in a thoufand inftances, in which roads having been *turned*, and the old ones of courfe neglected, they have in the courfe of a few years become, to carriages at leaft, entirely impaffable; and this altogether through the evil effects of running water on the furface of carriage roads.

If in these examinations and conclusions I have mission exceeded truth, it has not been by design. Fully convinced of the importance of roads, as a subject in Rural Economy, I have long paid them great attention, and wish to make myself fully master of the subject: I have even suffered myself to conceive that hollow roads might possibly. be right; though the principle, at sight, appears to be felf-evidently wrong.

This fummer (1789) being unufually wet, has afforded me a favourable opportunity of deciding, by observation, on the effects of round and hollow roads.

In

In traversing the District, I did not fail to notice these effects; and in riding from Leicester to London, through Warwickshire, Oxfordshire, &c. &c. after a month or fix weeks continuance of rains of every degree, I was, being more distingaged, still more attentive to the form and state of the roads.

The road between Nottingham and LOUGHBOROUGH is held out, by the advocates of hollow ways, as a fpecimen of their good effect.

This road, however, though much flatter than modern roads in general are, is by no means uniformly reduced to the principle and form contended for: indeed a part, which has been lately made, is thrown into the barrel form: a ftrong evidence that the trough principle, in this inftance, is growing into difrepute. Taking it altogether in its prefent ftate (rendered more tolerable by parts which lie fomewhat round, or which lie fhelving on the fides of hills) and confidering the materials, a charming gravel, and the publicnefs of the thoroughfare to pay for the forming and re-

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pairs;

pairs; the part I faw of it, between Trent Bridge and the top of Bunny Hill, may, without prejudice, be deemed one of the worft kept roads in the kingdom. The *fleeps* torn into inequalities, ftrewed with large loofe ftones, and fet with faft ones, in the true breakneck crufhcarriage ftyle, and the *levels* loaded with mud to the footlocks. The more gentle *flopes*, though uneven, harfh, and unpleafant to travel upon, were certainly not indictable: a proof that on fuch furfaces, and with fuch materials, roads may be kept in a travelable ftate, in defiance of running water.

All that can be faid farther of this road is, that had the materials been put into a better form they would have afforded a better road. In a country where good materials are fufficiently plentiful, a traveller who pays for his road, whether on horfeback or in a carriage, has a right to expect that it fhall be, not only found, but fafe and pleafant, to himfelf and his horfes: and a ftill greater right has the proprietor of a loaden carriage to expect to find the furface furface of the road, he pays for, firm, and free from obstructions.

Between LEICESTER and HINKLEY (except about Hilton) the material gravel; the form round—(fingularly well formed;) the fiate, nearly perfect, notwithstanding the feason ! even, firm, and in a manner free from dirt; except in fome few places, where the middle being worn hollow, for want of being timely kept up to its form, had taken the bollow form, and which were, of courfe, full of water, dirt, holes, and protuberances.

Through HILTON (a confiderable length) the road is intolerably bad. The material large stones: the form hollow—a rough irregular hollow pavement: the flate, such as suggests the idea, that it is under the direction of a wheelwright, or a surgeon. No public road ought to be suffered to remain in such a state.

Between HINKLEY and COVENTRY, various: part of it through a coalpit country; neverthelefs, and notwithftanding the feafon, even the levels, where the form was kept up round and even, and where the dirt, which had of courfe accumulated through

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the feafon and exceffive traffic, had been removed, were found, firm, travelable road: altogether on the *convex* principle; and altogether the beft *coal* road on which I remember to have travelled,

From COVENTRY to WARWICK, the material gravel, the form convex; the ftate, in defiance of the weather, nearly perfect throughout: ten miles of the beft gravel road in the kingdom.

WARWICK to STRATFORD — fimilar road; but not in fuch high prefervation. Some of the levels worn hollow, and of courfe dirty: fome of the flopes in the fame predicament, and of courfe hard, fharp, and uneven,

STRATFORD to the foot of LONG COMP-TON HILL, the material ftone, a fomewhat foft calcarious granate : the form, originally, convex; but, at prefent,—through a pretended want of materials, and the exceffive wetnefs of the feafon, but in fact through neglect,—in the true hogtrough form : the ftate what may eafily be conceived; a difgrace to the truft : a canal of puddle for miles together; and of courfe full of holes and

and knobs; fome of them hid; others fhowing their heads above the batter. A faddle horfe could not pick out a tolerable path: even foot paffengers were wading to market, and fervants to their places, to the tops of their fhoes in dirt.

What a difgrace to the diffrict through which it paffes: what an imposition on the public, to demand toll for fuch a road: and what a loss to the proprietors! A road let down into *fuch* a state, receives more injury in one day (in a wet feason) than it would receive in a week, if properly kept up to the form, and of course free from standing water. On this road, being mostly on the level, running water has not much power of injury.

LONG COMPTON to WOODSTOCK, the country more billowy (lefs level) and the road *fomewhat* better kept.

WOODSTOCK to OXFORD,—the material the fame kind of foftish stone: the form, once convex; but now, like chaos of old, it is without form. The *ftate*, most difficult to defcribe. It is barely passfable: as much worse than the road last described, as that F_4 is

is worfe than a fair travelable road : neverthelefs, the toll gate is kept *locked* ! and a *double* toll exacted ! Literally highway robbery !

At prefent (October 1789) this road lies in a ftate of total neglect : excepting the care of half a dozen men endeavouring to let off the water ! and where this is impoffible (the *pits* in the rock which forms the bottom of the canal, many of them lying below the neighbouring ditches), these *labourers* are employed in *fcooping* out the batter !!! mere mockery : one shower of rain undoes in five minutes their whole day's labour.

The plea held out, for its lying in its prefent flate of neglect is, that it is *taken*, but not yet entered upon, by the perfon or perfons who have taken it to repair; it being yet fome weeks before their time of entrance commences!

But why shall the public suffer through the private quarrels or quirks of individuals? This is at prefent one of the principal roads from London to Holyhead, and the main road to a confiderable part of England and Wales: an avenue of Oxford! and the high road to Blenheim!

OXFORD

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OXFORD to HENLEY various: good or bad in proportion to the roundness or hollowness of the form; and the flatness or elevation of the country.

HENLEY to MAIDENHEAD, - the materials flint and chalk; the form convex; the state nearly perfect, notwithstanding the seafon. In most places as clean and as fmooth as a gravel walk. The joint effort of the form effect and the materials.

Henley Hill (a great effort in roadmaking) affords, at present, a striking instance of the evil effect of running water on a steep. Though formed well, originally, fome ruts, through neglect, have been fuffered to catch the water; and being fuffered, by the fame neglect, to grow deeper and deeper, they are at length worn, near the foot of the hill, into furrows a foot deep !---which, by a few minutes timely attention to the infant ruts, might have been entirely prevented.

From MAIDENHEAD to LONDON, the material is gravel; the form convex; and the ftate, notwithstanding the country is a dead level, from end to end (twentyfix miles), and

and notwithstanding the unufual wetness of the feafon, was altogether fuch as no traveller has a right to find fault with. Where the convexity had been properly kept up, and the rain water prevented from lodging on the furface, it might be deemed in the state of perfection: except near town, where the wear is exceffive; especially in places where the reduced matter and the dung dropt upon it, had not been timely removed, and there it was unufually dirty: more efpecially where it passes between rows of houses; which, depriving it of a confiderable fhare of fun and wind, retards its drying in showery weather, and prevents the foil, in dry weather, from escaping in the form of DUST.

Throughout the ride, it was observable, that the state of the road as to *cleannefs*, was, other circumstances being similar, in proportion to its EXPOSURE.

Hence the utility of keeping down the hedges of lanes, especially in low situations.

Hence also a difadvantage of *bollow roads*; which not only retain MOISTURE, in wet weather, but DUST, in dry; while that of a round road is feattered over the adjoining fields.

In

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In snow, their comparative advantage is ftill more ftriking: a *bollow way* is well known to be the first place drifted up: the crown of a *round road*, the last place covered. In windy snowy weather, while one is rendered dangerous or impassible, the other is left free and fafe for passengers.

From the whole of this enquiry, as well as to common observation, it appears evidently, that the NATURAL ENEMIES of roads are *rain-water* and *fnow*; and that *fun* and *wind* are their NATURAL BENEFACTORS.

Hence, that FORM which leffens, prevents, or turns into a good, the evil effects of the former, and which gives the latter the greateft power of action, is evidently the most eligible: provided the *utility* of the road be not injured, or its *wear* increased, by fuch a form.

The PERFECTION of a road, with respect to UTILITY and WEAR, confists, as has been shown, in its *furface* being even, firm, and elastic; the interstices of the hard materials being filled, and their points sheathed, with finer matter: provided its *form* be that in which

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which its utility is greateft and its wear the leaft.

The ftate of **PERFECTION** of a road, as to FORM, that in which its utility is the greateft and its wear the leaft, is, beyond all argument and doubt, the ftate of perfect *flatnefs**: provided the surface could be kept in the ftate of perfection, under that form.

But it being, in practice, UTTERLY IMPOS-SIBLE, as appears demonstrably by the foregoing examinations, to unite the *perfection of furface* with *perfect flatnefs*, a more practical form must be fought.

In HOLLOWNESS we cannot hope to find it. It has been fhown that a hollow road, by collecting the water which falls on the *fleeps*, is worn into inequalities; part of the hard materials being carried off; and other exposed to unneceffary wear; rendering the furface unfafe, unpleafant, and injurious to the feet of animals; especially those of cattle; beside encreasing the resistance by hollows and protuberances; and thereby doubly encreasing the wear of the road: while the water

* See YORK. ECON. v. i. p. 184.

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water which falls on the *levels*, being unavoidably collected on the face of the road, the well known effects of ftanding water of courfe take place.

Thus, the great natural enemy of roads, **BAIN WATER**, inftead of being curbed in its mifchiefs, or converted to a friendly purpole, is, by HOLLOWNESS of form, left with full power of injury; while the WIND, their great natural benefactor, is, by this form, deprived of a confiderable fhare of its power of relief: dirt and du/t, equally, lie fafe and fecure at the bottom of the trough; which, inftead of being kept free from *fnow*, by the wind, is the firft place filled : the wind, in this cafe, being changed into an enemy.

With respect to snow, the *flat* form is preferable to the *bollow*: though in most, if not all, other respects, as to utility of furface, flatness is the worst possible form. By encreasing the hollowness of a wide carriage road, much beyond the utility of form, the margins might no doubt be brought into a travelable state; whereas, of a flat road, in a wet feason, every part, from fide to fide, becomes equally untravelable: or, at best, altogether

together unfit to be travelled on and paid for.

Hence, it is fufficiently evident, that in HOLLOWNESS nor in FLATNESS can anything near perfection, in form and furface jointly, be found. In ROUNDNESS, alone, we can, therefore, expect to find it.

It is evident, to demonstration, that, by rounding up a road, above the utility of form, the evil effects of standing and running waters might be equally avoided; and the good effect of the waters of heavy showers, running from the crown to the fides, carrying down with them the foil, and leaving the fand and gravel behind, might be obtained.

Confequently the UTILITY OF SURFACE is obtainable, in roundness, to the required degree of perfection.

But perfection in the UTILITY OF FORM cannot be had in roundness; it belonging, exclusively, to flatness: in which, however, the requisite UTILITY OF SURFACE cannot be preferved.

Hence we may fairly, and fafely, conclude, that perfect utility of furface, and perfect fect utility of form are UTTERLY INCOMPA-TIBLE: the former belonging folely to roundnefs, the latter exclusively to flatnefs.

Therefore, all that human art and induftry can do is to endeavour to hit the happy medium : to lower the roundnefs until a degree of flatnefs be found fufficient to render the form, though not *perfect*, fufficiently *convenient* to anfwer, fully, the general intention : preferving a degree of roundnefs fufficient, when properly kept up, to fecure it from the evil effects of flanding and running waters: a happy medium, which, though feldom hit, is more or lefs obfervable, in every quarter of the kingdom.

The requisite degree of roundness varies with circumitances: depends on the given fituation, the given materials, the width and the publicness of the given road. The steeps and levels, more particularly, ought to be kept as round as perfect conveniency will permit: for the quicker rain water escapes off the former, the less mischief it occasions; and the quicker it escapes off the latter, the more good.

Wherever

Wherever a road is observed to keep itself free from standing water and inequalities of furface, in a wet season; and this, where the form is not too round for the conveniency of top loads, every part of its surface being travelled over, the happy medium has been hit and preferved.

Roads bearing this telt are proper fubjects of ftudy for roadmakers, rather than any theoretic rule that could be offered; except that roundnefs of form, let the material, the width, and the publicity be what they may, is requisite in all feasons, and in all fituations.

Becaufe, under this form, heavy RAINS, inftead of being injurious, become friendly to them: and though more moderate fhowers will, in defpite of art and attention, be caught, more or lefs, by the lateral ruts; yet being expofed to the full effect of the WIND, their mifchief is of fhort continuance; and the wind continuing, until a flate of drynefs takes place, its effect becomes fimilar to that of heavy rains; carrying off the foil; leaving the fand and afford gravel to guard the hard materials, and to afford a furface, fafe and pleafant to the traveller, and friendly to the feet of tenderfooted animals.

On dry snow, the wind acts in the fame manner as on pusr: the crown of a round road is among the last places covered, and the first bared, in a snowy feason.

These being the principal facts and reflections that have occurred to me respecting the forms of roads, I put an end to this long, and to myself at least, tiresome article; which nothing but a defire of placing an important subject in a just light, could have induced me to have begun.

I confess, however, that I do not regret the attention I have bestowed upon it; as the fludying and digesting of it have brought to light truths, which otherwise I might not have seen, and which ferve to establish still more firmly, than those I had hitherto adduced, the superiority of the CONVEX PRIN-CIPLE;—of roads moderately round, with a free open channel on either side as a horse path; with banks level on the top, as guards to the paths, and as resources, in wet weather, for footpassers; and, where the width of Vol. I. G the

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the lane will permit, with a fide road for fummer travelling.

By giving this form to roads, and by preferving it with due attention, fo as to keep the furface free, as poffible, from water, and, in a continuance of wet weather, from a fuperfluity of reduced materials; and by paying proper attention to the fide roads;—I am clearly convinced that a very confiderable proportion—perhaps one third—perhaps one half—of the money now expended on the roads of this kingdom might be faved.

And although the whole of the expence of roads does not fall on the farmer; yet, confidering the toll he pays, in addition to the labour, or the rate, he is obliged to furnish, the principal part of it may be faid to fall on the occupiers, and of course, eventually, on the owners of lands; a fact which will fully apologize, I hope, if any apology be required, for the length of these observations.

For an inftance of a rough fandy road being. imoothed at a imail expence, fee MIN. 71.

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FENCE S.

IN A COUNTRY which, for fome time palt, has been changing from an open to an inclosed state, we may reasonably expect a degree of excellency in the art of hedge planting. It feldom happens that, under fuch circumstances, the art remains in a ftate of obfcurity; but that the prevailing mode of execution is adapted to the given foil and fituation.

This, however, is not invariably the cafe . in fimilar fituations, on fimilar foils, and under similar circumstances, we find very different modes of performing the fame operation: a proof that the rural arts are either very abstrufe, or are not universally studied with due attention.

In Norfolk, where a deep free fubfoil prevails, we fee hedgewood planted by the fide of a deep ditch, and perhaps near the top of

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of a high bank; and this notwithstanding the substrata are naturally absorbent or dry. While in this district, likewise having a deep free foil and subsolit, the plants are laid into a flat broad low bank, with a narrow shallow ditch; a mere trench; and this notwithstanding the substrata are, in a manner invariably, retentive or wet; and the surface waters, of course, have no other way of efcaping, than by means of deep ditches. In a recently inclosed common field, I have seen ditches a foot deep, with water standing in the furrows, hard by, not less than fifteen or eighteen inches deep!

This error in practice, however, is rather detrimental to the lands, than to the hedges; which, in this diffrict, are above par; and their treatment, of courfe, requires attention.

The useful ideas, collected in this case, fall under the heads,

Raifing new Hedges;

Treatment of grown Hedges.

RAISING NEW HEDGES. The fpecies of bedgewood, whitethorn, with fome inflances

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of crabtree *. At prefent, however, "garden quick" may be faid to be the univerfal hedgewood; although there was, within the memory of many men, no fuch thing in ufe.

The rejection of nurfery plants, however, did not proceed from ignorance in the method of raising them, but from principle, founded on a false notion that plants, pampered in the rich foil of a garden, were of course improper to be planted in a ditch bank of common earth. No, no; the planters of those days knew better. "Gather them in woods, where they have been exposed to hardships, and have learnt to live upon coarse fare, and, in that case, when they come to be transplanted into hedges, they mu/t thrive."

A gentleman near Tamworth was the first who ventured to plant garden quick on a large fcale; and his fuccess ruined the *bufi*-

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* HOLLY HENGES. In this district I observed a natural holly hedge flourishing, as a fence against every thing, under very low-headed spreading oaks: an evidence of what might be expected from holly hedges under oaks properly trained.

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mefs, as it had long been, of quickgathering. The quantity now raifed, at Tamworth and its neighbourhood, for the Birmingham and other markets, is extraordinary. It is moftly transplanted. Its price, even at Tamworth, feven shillings a thousand: at Birmingham eight to ten shillings: yet at those prices one gardener fells, even when no public inclosures are going forward, three or four hundred thousands annually.

The most judicious planter I met with in the districts, and from whom, with the gardener here alluded to, I had these particulars, chuses his plants at four years old, transplanted at two; and cares not how rich a foil they are raised in.

The time of planting, here, is not unfrequently autumn. I had an opportunity of making a comparative obfervation, on a neighbour's practice, between plants fet in autumn, and others planted, in continuation of the fame hedge, in fpring. The autumnal planting, in this cafe, had a decided preference. But the fituation was fomewhat dry; and the fpring and fummer proved fo likewife :----under thefe circumftances autumnal planting will generally fucceed beft.

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The method of planting has been faid to be that of putting the plants into a broad flat mound : generally planting two rows; ten or twelve inches apart, and a fimilar diftance. from the brink of the trench, by the fide of which they are planted.

The reason given for this mode of planting is, that a deep ditch makes a high heavy bank, and this " overloads the roots."

There is, no doubt, fome truth in this reasoning. Plants never thrive fo well as on level ground, provided they are not incommoded by ftanding water: fee YORK. ECON.: and the difadvantages of a high heavy bank have been pointed out in the NORF. ECON. : but it is a fact, evident in various parts of the kingdom, and particularly in my own practice in three different and distant parts of it, that hedges may be raifed with fuccefs in the front of a high bank; and that its difadvantages are by no means equal to the advantage gained by a deep ditch and high bank, as a defence to the rifing hedge.

Two rows of posts and rails are here the common guard : incurring an expence equal to twice that of a deep ditch G 4 and

and banklet on one fide, and a high bank and hedge on the other. If the hedge be planted behind a fhelf of fufficient width, and part of the mould of the ditch be applied in forming a banklet on its outer brink, the load incurred by the remainder is little, if any, impediment to the progrefs of the young hedge.

For the method and expence of planting a hedge in this manner, See MIN. 123.

The nurfing of young hedges, a bufinefs which, in most parts of the kingdom, is in a manner totally neglected, is in many cafes well attended to here. They are pretty generally weeded, and, in fome instances, hoed : in others, however, they are here, as in other places, feen struggling among weeds; principally of the following species.

I enumerate them here, as I paid more attention to hedgeweeds in this, than in any other, diffrict : and though they vary, in fome degree, in different places, they are, upon the whole, very much the fame in all.

Hedgeweeds

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5. MIDLAND COUNTIES.

Hedgeweeds of the Midland District,

Weeds of young Hedges,

Couch grafs and other graffes *.

The thiftles, particularly the spear thiftle; The docks:

The nettle;

Sowthiftles;

Hawkweeds; and a variety of finall weeds, which rob the plants of their nourifhment, and ought to be cut off with the hoe, fo often as they rife.

The convolvolus;

The blue-tufted vetch, and other vetches; and

The cleavers, and other climbing plants, are a burden to the taller more upright fhoots.

In low moift fituations,

The meadow fweet;

The

* I have feen, in this diffrict, quick planted, acrofs a foul arable inclosure, in a bed of couch ! Nothing can be greater folly. The other graffes may be deftroyed with the hoe; but fcarcely any art can free young hedge plants from couch; which ought, at any coft, to be deftroyed before the hedge be planted, **go**

The wild angelica;

The willowherbs (epilobia);

The perficarias, &c. &c. are almost certain fuffocation to weak plants, the first and fecond years, if not repeatedly removed by hand, fo often as they threaten the injury of the infant hedge.

Weeds of older Hedges.

The briar;

The bramble;

The woodbine;

The bitterfweet (folanum dulcamara);

Black briony (tamus communis); and in fome places, the white briony (bryonia alba); and the

Traveller's joy (clematis vitalba); are very deftructive to hedges; especially if suffered to grow up with them, either in the first instance, or after the hedge has been cut down.

They ought therefore, in both cafes, to be eradicated, or at leaft cut out and kept under, until the hedge be free from injury.

THE TREATMENT OF GROWN HEDGES. *Plashing* may be called the univerfal practice of this diffrict. Neverthelefs, I have obferved a few inftances of cutting hedges, that 5.

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that do not come within the description of plashing.

In this practice; one row of fitems, if double quicked, is cut to the flub, the other, hedge height; not level off, or all of the fame height, but in fuch a manner as to lean back, away from the flubs of the fallen row; cutting those which fland foremost the lowest, and such as lean or branch away from them, the highest; leaving the back spray on, to form a blind, and affist to make a fence.

Under this management, two rows of quick are evidently preferable to a fingle row; for although I have feen fingle quick treated fomewhat in this manner, efpecially in Derbyfhire, the effect is very different. In this cafe the ftools and the ftems are fed from the fame roots; the fame fet of fibres; and the ftems with the fpray left upon them, rob the lower fhoots, from which the new fence is to rife, of a great part of their fap. While in the other, the ftools not only ftand diffinct from the ftems, but have a diffinct fet of roots to fupport them, entirely independent of the ftems left ftanding as a temporary fence.

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The methods of plashing are various: the old and still most prevailing method is to

leave paof the stems standing, as "live stakes"; between which the plashers are interwoven, in the usual manner.

Judicious managers, however, object, and with good reason, to live stakes; which, throwing out fpreading heads, in the pollard manner, overhang and deftroy the plashers, and prevent the shoots of the ftools from rifing : confequently tending to convert the hedge into a row of thorn pollard; in which flate old hedges, that have been thus treated, are too evidently feen. On the contrary, when the entire hedge is cut down, or crippled as plashers, to the stub, the plashers have no impediment, and the young fhoots are the lefs incommoded in as much as the plashers shoot less luxuriantly than the flakes. Still, however, the shoots from the ftools, the only offspring of the old hedge from which a new one can be expected, are greatly injured by the plashers overspreading them.

Hence an improvement has been ftruck out, in this diffrict, which probably railes the art of plashing to its higheft degree of



of perfection. This is effected, by driving the dead stakes, not in a line with the stubs, but some foot or more behind them, and by winding the plassers among them, and eddering them, according to the custom of this country, with brambles, leave the shoots from the stubs the same air and headroom, or nearly the same, as if the whole were cut down, and a dead hedge raised behind them.

The advantage of this method of plashing, compared with the practice of felling the whole to the ftub, is, that a live hedge, which improves by age, is raifed, inftead of a dead one, which grows worfe every year. The difadvantage, that of part of the fap (of fingle hedges) being drawn away from the young fhoots; which, in this cafe, are left lefs free and open, than when the whole of the ftems are cleared away at the ftub.

However, where there are a fufficiency of .young pliable ftems for plashers, and the ditch does not require much repair, the plashing here defcribed may have, upon the whole, the preference; especially if the plashers, when the young hedge has got up, be removed from their interference with the upright shoots.

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But, where the hedge has been neglected, the ftems are grown few and large, particularly where vacancies require to be filled up by layers or otherwife, and the ditch requires to be new made,—felling to the ftub is indifputably preferable.

It is observable, however, that in the difrict under survey, the ditch is rarely remade, and but feldom scoured : even where the soil is retentive; and a ditch, of course, necessary to good management.

The reafoning, in this cafe, is the fame as in that of planting by a narrow ditch: namely, the fear of "overloading the roots!" In that cafe there may be fome shadow of truth; but in this, in which the roots are feeding feveral feet from the bank, there is probably not the least foundation. The practice, no doubt, originates in indolence or falle economy.

This cenfure, however, is not intended to be paffed indifcriminately. There are many individuals, who are aware of the utility of open ditches, in freeing their lands from furface water.

KEPERENCES

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References to the Minutes on Fences.

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For the principles of *Gatebanging*, fee MIN. 36. For obfervations on making *Sodbanks*, fee MIN. 49.

- For further observations on Hanging gates, see MIN. 54.
- For an inftance of practice in Hedgeplanting, fee MIN. 123.
- For a proof of the nuifance of wide bedges, fee MIN. 131.
- For observations on water standing against live hedges, see MIN. 132.
- For remarks on the weeding of bedges, fee MIN. 152.

For observations on the nature of the root of the *bawthorn*, and on *rippling bedge banks*, fee MIN. 159.

For a proof of the nuisance of bigb hedges, fee MIN. 160.

For further Observations on high hedges, see MIN. 161.

For the probable origin of crooked hedges, fee MIN. 162.

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HEDGEROW

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HEDGEROW TIMBER.

FEW DISTRICTS are io thin of hedgerow timber as this. The old enclosed townships have a tolerable share, but the new inclosures, which, with the open fields that yet remain, constitute a principal part of the Midland District, are as naked, to the distant eye, as the downs of Surrey, or the wolds of Yorkshire. LEICESTERSHIRE, more particularly, stands in this predicament. There is not, speaking generally, a young oak in the county. If this error should not be rectified, there may not, in half a century, be a tree left in a township.

This poverty in hedgerow timber has probably arifen, partly in neglect, but much more in a rooted antipathy, among occupiers, against trees in hedges. The mischiefs of the assessment of the second second second second having been experienced, all species have been indiscriminately proferibed.

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The afh, the elm, and lowheaded oaks, are indifputably mifchievous in hedges—injurious to the occupier, and deftructive to the hedge.—But oaks trained in the manner which I have repeatedly recommended *, while they enhance, in a very high degree, the value of an eftate, do, comparatively, little injury to the occupier, and but very little to the hedge.

The DISTRICT of the STATION furnishes an inftance of the latter part, at least, of the above affertion. The road through an entire township (I believe)—Grindon—the residence of Lady Robert Bertie—has on each fide of it a line of tall stemmed trees, mostly oaks, rising in a trimmed hawthorn hedge; which, far from being destroyed by them, flourishes with extraordinary vigour; closely embracing the stems of the trees; a fence against any thing.

The lowheaded *pollard* is feldom feen in the hedges of the old inclofures of this diftrict; which, however, fometimes exhibit a ftill more aukward object: a kind of tall, and mostly crooked ftump-a fomething between

^{*} PLANTING and ORN. GARD. and NORF. ECON. Vol. I. H

tween a tree and a pollard;—with frequently a fingle fmall bough, left on one fide of its top! as if the owner, having repented of his folly, were endeavouring to convert the object into a tree again.

For the method of taking down, &c. fee the next article.

For an inftance of practice in *training* hedge oaklings, fee MIN. 155.

7.

WOODLANDS.

VIEWING THE MIDLAND COUN-TIES generally, they are ftill fufficiently wooded; although there has, within memory, been an undoubted decrease.—Charnwood Foreft has not, figuratively fpeaking, a flick left in it; though, within the prefent century, much of the ancient foreft remained. Many fmaller plots of woodland, and townfhips of well wooded hedges, have been cleared away, within the laft fifty years.

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There is little danger, however, of the diftrict fuffering through a want of TIM-BER.—WARWICKSHIRE, STAFFORDSHIRE, and DERBYSHIRE, are still fully wooded; LEICESTERSHIRE, with the private woods fcattered round the skirts of the forest, and on the borders of RUTLANDSHIRE, has yet a fufficiency left to supply its internal confumption.

But with refpect to COPPICE WOOD, many parts of Leicefterfhire, more particularly, muft even now feel a want, and experience many inconveniencies, which a diftribution of coppices would remove. It is true, that many of these woodless parts are too valuable, as grass or arable land, to be converted, on a large scale, into coppice grounds. Nevertheless, there are, in most townships, cold patches of soil, less productive of corn and grass, and angles in the outline of every estate, which might be profitably planted with coppice wood.

The DISTRICT of the STATION is in a manher furrounded by woodlands, and, during my refidence in it, I collected, through this and other circumftances, more information respecting their management, than in any H 2 other

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other I have refided in. The fubject, therefore, requires, in this place, especial attention.

The information obtained classes under the following fubdivisions :

1. Raifing.	4. Timber.
2. Selling.	5. Bark.
3. Taking down.	6. Coppice.

I. RAISING. It is more than probable, that most of the private woods, which we see, at present, scattered over the island, have been raised by art; and that they are not, as they are generally supposed to be, remnants of the ancient forest, or native woods.

In the old woods of this quarter of the kingdom, it is pretty generally obfervable, that the north and eaftern margins abound with afh, while the body of the wood is principally oak; and it is believed that the afh, being a quick-mounting tree, was propagated there as a fcreen to the oaklings. This is a circumftantial evidence of their being raifed by art: while the *evident veftiges of the plow*, in other inftances, are proofs of the polition; at leaft as to thefe inftances.

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* But see MIN. 166.

But the practice of PROPAGATING WOOD-LANDS (I mean ordinary woodlands of eak; afh, or other native woods) can be traced by circumftances only, in every part of this ifland I have observed in, excepting NORTH WAR-WICKSHIRE; where the practice may be faid to be at prefent in use. Several young woods are now getting up from acorns and other tree feeds, fown by the hands of men now living. Yet their appearance to the eye, on the closeft examination, is the fame as that which we observe in cases where the proof is lefs positive.

The MODE OF PROPAGATION is that of fowing acorns, keys, &c. with the feeds of corn; or of dibbling them into grafsland; as will more fully appear in MIN. 124.

II. SELLING TIMBER TREES. The prefent mode of difpofal is by auction,—as it ftands:—a mode always to be recommended, for reafons already given. See YORK. ECON. i. 241.

The method of VALUING timber. The only circumftance which requires to be mentioned, here, is that of valuing the timber and bark feparately;—keeping two diffinct accounts. This is done by the timber mer-H 3 chant

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chant when he fells the bark to the tanner by fuch valuation: a practice which is not uncommon: the tanner, of courfe, making his counter valuation of the bark only. Vague as this mode of valuation may feem, and various as the proportions between the timber and the bark of different trees really are, there are men, accustomed to this mode of estimation, who, it seems, will come very near the truth.

III. TAKING DOWN TIMBER TREES, Three methods of felling are here in use :

Stocking,

Axe-grubbing, and

Axe-falling.

STOCKING (a provincial term for grubbing, or digging with a mattock, &c.) is a kind of partial grubbing. The roots are cut through, a foot or more from the ftem; and, again, a foot or more from the inner cutting; taking up a fhort length of the thickeft part of the roots, and digging a trench round the tree, wide enough to come at the downward roots, Ax5.

AXE-GRUBBING is fimilar to the Norfolk grabbing (fee NORF. ECON.), only the end of the but is left larger here than in Norfolk.

AXE-FALLING is the common method of Yorkshire and other places, of cutting off, aboveground, with the axe:—a method which is feldom practifed; except in fome few cases, where another crop of timber or coppice wood is intended to be taken.

Stocking is the prevailing method;—the PRICE FOR TAKING DOWN varying with the fize of the tree: for a tree of two feet diameter, the price is about a fhilling; and about four pence more for cutting off the but; the ftocking and butting being generally let together.

PEELING BARK. The Peeling Tool commonly made use of, here, is of bone. The thigh and the shin bone of an ass are preferred. The former (a two-handed instrument) for the stem and the larger boughs; the latter, for the smaller branches. The handle, a crutched piece of wood, fixed in the end of the bone. The point once given, by the grinding stone, or a rasp, keeps itself sharp by wear.

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The ARMS OF BOUGHS are cut up into pofts, rails, and "cordwood," for CHARCOAL. The price for cutting and fetting up cordwood is about two fhillings a cord of "yardwood." A "ftatute cord" measures four feet high, four feet wide, and eight feet long. But four feet lengths being inconvenient to the charcoal burners, it is generally cut into lengths of three feet; confequently a cord of yardwood is only three fourths of a ftatute cord *.

The SPRAY is generally formed into fagots, provincially "kids,"—the price for "kidding" a fhilling a load of fixty kids; or, if the workman finds bindings, fifteen or fixteen pence a load.

IV. TIMBER. The confumption of the timber grown in this central part of the ifland (excepting the Banks of the Trent) falls chiefly among inland dealers.

In a maritime country, the trees are carried bodily to the fhip yard : here, they are moftly divided, in the places of their growth, into a variety of wares; hence, the bufinefs of

• The STATUTE CORD of this country, therefore, agrees pretty nearly with the STACK of the fouthern counties; though their dimensions are very different.

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of cutting up—provincially and properly termed "converting" timber,—is, here, conducted in a fuperior manner; a quick judgment of the proper wares, into which a given tree ought to be converted, requiring much practice.

The wares, into which the timber of this neighbourhood are converted, will appear in the MINUTES.

V. BARK. Oak bark is difpofed of in two different ways: one of them peculiar, perhaps, to this diftrict; in which, as has been faid, it is fometimes valued upon the tree; the wood merchant carrying on two valuations; one of the timber, the other of the bark; felling it to the tanner, who likewife makes his effimate, by the lump.

The other mode of difpofal is the common one of felling it by the ton, in the rough: the method of weighing it, or rather of eftimating its weight, is, however, noticeable. The bark having been fet up in the ufual manner, but with more than common care as to evennefs of quantity, againft horizontal poles or treffels; and having ftood fome nine or ten days, more or lefs, according to the weather, until the fit to carry. carry, the buyer chooses one, two, three, or a greater number of yards in one place, and the seller a like number in another. These yards of bark are weighed, and the rest measured and estimated accordingly *.

VI. COPPICE WOOD, The two principal coppices, of the Diftrict of the Station, are those of Seal and Hopwas; the former in Derbyshire; the latter in Staffordshire.

The age at which coppice wood is cut in this part of the kingdom varies much with the intended ware. For pofts, rails, and coalzvood, twenty years or upward are requifite to bring the wood to fufficient fize. But for the fmaller wares, into which the produce of the coppices of this neighbourhood are chiefly converted, they are felled much oftener.

The prevailing wares are *flakes*, *edders*, *burdles*, *brooms*, and *cratewood*; the last a fpecies of coppice ware I have not met with before; but which is here a confiderable article: the Staffordshire potteries working up no fmall quantity of wood in making their various packages.

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• The fame estimation being taken by the tanner and the peelers.

In this quarter of the island; especially on the Staffordshire fide of the diffrict; where iron forges abound, CHARCOAL becomes an object of confiderable magnitude to the woodman. I had an opportunity, here, of paying close attention to the process of burning it; as will appear in the MINUTES.

For the practice and profit of cultivating oak woods, fee MIN. 124.

For inflances of neglect in the training of young oak woods, 125.

For instances of oak woods being disfoliated by the chafer, fee MIN. 126.

For the process of making charcoal, see MIN. 127.

For remarks on *feedling oaks* rising spontaneously in grassland, see 128.

For further obf, on the chafer, 129.

For the confequent appearance of the oak, fee MIN, 130.

For obf. on the growth of the a/h, 193.

For obf. on the growth of the elm, 134.

For obf. on the growth of the poplar, 135.

For an account of the *fale* of Merevale timber, fee MIN. 136.

For obf. on the rife of the fap in old timber oaks, fee MIN. 137.

For

For the *fale* of Weeford Park timber, 138. For the *fale* of Statfold oak timber, 139.

For obf. on the time of *felling* oak timber, 140.

For remarks on the "lag" in timber, 141.

For further obf. on the rife of the fap of oaks, fee MIN. 142.

For obf. on the method and caution in *fell*ing timber, 143.

For remarks on tapping oaks, 143.

For remarks on training timber, 143.

For general obf. on the age of timber trees, fee MIN. 144.

For the method of *falling* trees with wedges, 145.

For further obf. on the chafer, 147.

For remarks on the timber of Needwood Foreft, &c. and on the age of oak timber, 149.

For a description of the Swikar oak, &c. 149.

For an instance of the oak being injured by an inset, fee MIN. 150.

For farther obf. on *charcoal*, fee MIN. 151. For reflections on the *decline of oak timber*, fee MIN. 154.

For

For farther obf. on the *cultivated woodlands* of North Warwickschire, see 156.

For remarks on banging woods, see MIN. 157.

For an evidence of the experience requisite in the business of *converting* timber, 158.

For remarks on the advantage of woods on rock, fee MIN. 158.

For the *fale* of Statfold ash and elm, 163. For remarks on adapting perennial plants to foils and fituations, 164.

For inftance of practice in converting oak timber, 165.

For remarks on the *age*, &c. of ash and elm, 166.

For a description of the Middleton oak, 167.

PLANTING

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8.

PLANTING.

THE ART OF PLANTING is feparable from that of raifing woodlands in a more natural and fimple way, immediately from the feed. This is a fummary operation, like that of fowing a crop of corn, or laying down land with grafs feeds. The other a progreffive work; confifting of various nice and difficult operations; both in the NURSERY and in the PLANTATION. Neverthelefs PLANTINO is, at this day, the prevailing mode of propagating trees; whether for USE or for ORNAMENT.

With a view to mere utility, however, PLANTING, except in HEDGEROWS, can rarely be adopted with propriety. But where ornament is a joint, or the principal object, planting is in most cases eligible.

It is not my intention to introduce the fubject of RURAL ORNAMENT, in a work of RURAL

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RURAL ECONOMY. Neverthelefs, the ART OF PLANTING, which is applicable, on many occafions, to use as well as ornament, is profeffedly a branch of the prefent work.

Planting is indeed an art to which I have long been partial, and on which I have, at different times, beftowed confiderable attention.

Some years ago, I digested my ideas on the subject, and revised them, in the press, during my residence in this district *.

Warm with the fubject, and withing to extend my practice, I undertook, while I was *improving* this eftate, to *ornament* it.

How far I have fucceeded, the place itfelf must fpeak. What I purpose to convey in these volumes are some practical observations on PLANTING: an art which my success has led me to believe I have in some measure advanced.

But these remarks being on my own practice, they will appear with most propriety in the second volume. See the MINUTES referred to below.

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* See PLANTING and ORNAMENTAL GARDENING, a Practical Treatife; in one volume octavo.

The plantations of this diffrict are few, and afford little information on the fubject.—Excepting those at FISHERWICK, done under the direction of the late Mr. BROWN, few have fucceeded well. But, in every part of the island, we see fimilar miscarriages in planting: a proof that the art is not generally understood, or not sufficiently attended to.

The only circumstance that requires to be noticed, respecting the practice of planting in this district, is that of the nurseryman's *infuring* the plants the first year. That is, if they do not grow, he furnishes his customers with fresh ones in their stead : and this whether he plants them himself, or leaves it to others to put them in; provided that in the latter case they follow his directions.

This practice, I understand, was first established by a nurseryman of Coventry; but has fince, through a kind of necessity, been adopted by other nurserymen.

Where the nurferyman is employed to put in his own plants, this is a *reafonable* practice; but, when we confider how much depends on the operation of planting, it can fcarcely be

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be deemed fuch to infure the fuccefs of others.

For a detail of my own practice in the fpring of 1785, fee MIN. 146.

For inftances of the want of fuccels in planting in the dry fpring of 1785, fee MIN. 148.

For farther remarks on my own practice in 1785, see 153.

For remarks on the advantage of planting Reep flope, see 157.

For a detail of my own practice in the mutumn of 1785, and the fpring of 1786, fee MIN. 168.

Yol. I.

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FARMS.

FARMS.

THE SIZE OF FARMS, throughout the MIDLAND DISTRICT, is large, confidering the quality of the foil.

The DISTRICT of the STATION contains fome capital farms. Bramcot, Pooley, Alncot, Amington, Sier foot, Hogshill, Dunnimeer, Statfold, Thorp, Seckington, &c. &c. lying immediately in this neighbourhood, rank among the first class of farms in the kingdom. Most of them three to four or five hundred acres of land, worth twenty to twentyfive shillings an acre.

These farms are fituated in the old inclosed parts of the district. How they have been aggregated to their present fize is not obvious. Probably, they have never been in the state of common field. Formerly, much of them lay in large — "feeding pieces"—grazing grounds—of fifty or fixty acres each. This accounts for the present straightness of many of

of the hedges. Some of them are extraparochial; and may be fubdivisions of townships given, by the feudal lords, to their dependants. This, however, by the way.

The CHARACTERISTIC OF FARMS varies of course with their state as to inclosure. The open township, as well as those which have been recently inclosed, are mostly in a state of aration.

The farms of the older inclosures, of which only I shall speak, are much of them in grass; being subjected, in the manner which will be shown, to an alternacy of grass and arable.

10.

FARMERS.

EVERY DISTRICT has its leading men; its "capital farmers:" their proportionate number varying, in fome degree at leaft, with the fize of farms prevalent within it, and the ftate of hufbandry at which it has arrived.

I · 2

Thefe

These men confist either of TENANTS, whose fathers, having profited by their good management, have left their sons sufficient capitals and knowledge to increase them; or of the superior class of YEOMANRY, cultivating, in continuation, their paternal estates.

This class of occupiers have many advantages over the lower orders of hufbandmen. They travel much; especially those whose principal object is livestock. They are led to distant markets, and perhaps to the metropolis. They see, of course, various modes of management, and mix in various companies: consisting not merely of men of their own profession: men of fortune and science have, of late years, admitted them into their company: and to their mutual advantage.

Thus their prejudices are worn off, their knowledge enlarged, and their difpolitions rendered liberal and communicative, in a degree which those, who have not mixed and conversed freely with them, are not aware of.

The MIDLAND DISTRICT may boast of a greater number of this description of men, than

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than any other I have yet been over; and we may, I apprehend, venture to add without rifque, than any diftrict of equal extent in the kingdom. It is not only a largefarm and grazing country; but the fpirit of breeding, which has gone forth of late years, has infused an ardour and exertion among them, unobservable in other districts. Except in Yorkshire, I have found the spi-RIT OF IMPROVEMENT nowhere so high.

Befides thefe, many of the MIDLAND FAR-MERS have had other two, great advantages, of which farmers in general are in want.

Formerly, and still in many districts, yeomen and farmers, who were able and willing to educate their fons, did it folely with a view to fit them for trade, or enable them to follow one or other of what are emphatically termed the *profess*. Being educated, they were of course incapacitated for farmers!

Not fo, however, in this country. There are men, now at the middle age of life, who have had a regular SCHOOL EDUCATION; and who, inftead of being fent out of the country to a trade, or a " profession," have been I 3 placed

placed as PUPILS, with fuperior farmers, at fome diftance from their fathers' refidences. Thus not only improving their knowledge by a double tuition, but breaking off, in their tender ftate, those attachments to cuftoms, right or wrong, which those, who have feen only one mode of management, are too liable to form.

Hence, we find this description of men not only ADOPTING fuch IMPROVEMENTS as have gained a degree of establishment, but striking out others by EXPERIMENT, and still farther enlarging their ideas by READING: and this with little danger of being missed. Their judgements are in a degree formed. They have a basis to build on.

Among the rifing generation, and "it a very few years, we may expect to find numbers of this clais of occupiers. Almost every fubstantial farmer, now, educates his fons, and brings up one or more to bis own profeflion.

If ever agriculture be brought near to perfection, this is the clafs of men who mult raife it. MEN OF FORTUNE may, and ought for their own intereft, to encourage and promote, for with them, eventually, center the profits

MIDLAND COUNTIES. 1.10 £Q.

profits of improvement. But the SUPERIOR CLASS OF PROFESSIONAL MEN mult suggest and execute *.

With respect to the LOWER CLASSES of HUSBANDMEN, who form the main body of occupiers, their business is to follow : and, if the men, whom they are in the habit of looking up to, lead the way, though it may be flowly, they are fure to follow.

Thus improvements, struck out and effected, by the fuperior class of professional occupiers, are introduced into common practice; while those of unprofessional men, if they merit adoption, die for want of being properly matured; or, if raifed into individual practice, feldom become ferviceable to the community at large.

The great bulk of occupiers confider every man who has not been bred up in the habits of I 4

* BY PROFESSIONAL MEN, I do not mean those, only, who have been bred up to husbandry from their youth. There are men, in every quarter of the kingdom, who, having attended perfonally, and closely, during a course of years, to the minutiæ of husbandry, as a profeffion, are of couffe become PROFESSIONAL : and many MEN OF FORTUNE, who, having paid a fimilar kind of attention to PRACTICE, have acquired, of course, a fimilar kind of PRACTICAL KNOWLEDGE.

of hufbandry, or enured to them by long practice, as a vifionary; and are more inclined to fneer at his plans, than adopt them, though ever fo excellent.

Hence, probably, the inefficacy of the numerous SOCIETIES of agriculture, which have been formed, in various parts of the kingdom. There is only one, that of BATH, which, from all the information that has come within my knowledge, has been in any confiderable degree fuccefsful; and the fuccefs of this, probably, has been, in fome degree at leaft, owing to the professional men who belong to it.

Societies formed of PROFESSIONAL MEN, encouraged and affiled by the LANDED INTE-REST, could not fail of being beneficial, in promoting the rural affairs of these kingdoms; and the MIDLAND COUNTIES, whether from centrality of fituation, or from the number of superior managers in it, are fingularly eligible for such a society.

But societies, on the plan which has hitherto been adopted, though they were to be formed of professional men under the patronage of the landed interest, would still be, in their nature, little more than theoretical.

cal. Mere focieties want the *fubject* before them. Their most probable good effect could be that of affimilating, by frequent meetings, the fentiments of the PROPRIETORS and the OCCUPIERS of lands: thereby encreafing the neceffary confidence between them; and thus far, of course, becoming effentially ferviceable to their common interest. But they fall far short of being the most eligible institutions, for the advancement of rural knowledge.

In the Digeft of the MINUTESOF AGRICUL-TURE, on the fubject PUBLIC AGRICULTURE, I proposed an establishment of AGRICUL-TURAL COLLEGES, to be distributed in different districts, as SEMINARIES OF RURAL KNOWLEDGE.

It is now more than twelve years fince that propofal was written, during which time my attention has been bent, unremittingly, on rural fubjects and the refult is, that I now fee, ftill more evidently, the want of RURAL SEMINARIES.

The feminaries there proposed are, however, on too large a fcale for any thing lefs than NATIONAL establishment; and COMMERCE, rather than ACRICULTURE, appears to engage,

engage, at prefent, the more immediate attention of GOVERNMENT; and this notwithftanding the prefent fcarcity of corn is fuch, that we are asking, even the AMERI-CANS, for a supply; and notwithstanding a very confiderable part of the CATTLE, which now come to market, are the produce of IRELAND. See MIN. 122.

I have already faid, in the course of this work, that it is not my intention to obtrude my fentiments, unfeemingly, on NATIONAL CONCERNS; but posselied of the mass of information, which, in the nature of my purfuit. I must necessarily have accumulated,-no man, perbaps, having had a fimilar opportunity,-I think it a duty I owe to fociety, and an infeparable part of my prefent undertaking, to register such ideas, whether national or professional, as refult, aptly and fairly, out of the fubject before me : and, in this place, I think it right to intimate the probable advantage which might arife from a BOARD OF AGRICULTURE; ---- Or, more generally. of RURAL AFFAIRS; to take cognizance, not of the flate and promotion of AGRICUL-TURE, merely; but also of the CULTIVA-TION OF WASTES and the PROPAGATION OF TIMBER ;

TIMBER : bales, on which, not commerce only, but the political existence of the nation is founded. And when may this country expect a more favourable opportunity, than the present, of laying a broad and firm basis of its future prosperity?

The ESTABLISHMENTS, I am now about to propofe, might be formed by INDIVIDUALS, in various parts of the kingdom; and might readily be raifed into PRACTICE.

The SITUATION of an establishment of this nature ought to be (though not neceffarily) upon a confiderable landed estate; as five thousand acres of tolerable foil.

The immediate SITE might confift of five hundred acres, more or lefs; laid out into two FARMS, or general divisions;—the one ECONOMICAL, the other EXPERIMENTAL*.

The ECONOMICAL division to be established, in the outset, on the best practice of the district it may lie in; and to be conducted

• If the MANAGEMENT OF ESTATES, including PLANTING, RURAL ARCHITECTURE, &c. &c. fhould form parts of the establishment, an ESTATE would be in a degree requisite. But, if it were confined to AGRI-CULTURE, folely, 2 FARM, only, would be wanted.

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ducted on the most rigid principles of pecuniary advantage.

The EXPERIMENTAL part to be appropriated, chiefly, to HUSBANDRY, with a compartment for PLANTING, and another for BOTANY.

The part appropriated to PLANTING to confift of a NURSERY GROUND, and fuch corner or forcen PLANTATIONS, as may be wanted for the use of the estate: the intention being that of making experiments on the propagation of WOODLANDS and HEDGES; as well as that of raising NEW VARIETIES of trees and hedgewoods.

The BOTANIC GARDEN to receive a collection of NATIVE PLANTS, as well as of the feveral VARIETIES of CULTIVATED PLANTS, whether native or exotic: its intended use being that of a school of BOTANY; as well as that of raising NEW VARIETIES of the agricultural plants already cultivated; and of endeavouring to discover, smong the uncultivated species, FRESH PLANTS, fit for the purpose of cultivation,

The reft to be appropriated to EXPERI-MENTS in HUSBANDRY; on the feveral departments of the ARABLE and the GRASS-LAND LAND management; as well as on LIVE-STOCK;—a most interesting subject of experiment; as will appear fully, under that head, at the close of this volume.

The use of this compartment requires not to be explained. It may, however, be proper to fay, that the general intention proposes, as the main purport of the establishment, that, as an operation, a process, or a general principle, shall be fully *proved* by experiment (but not before, however *plaufible* it may be in theory), it shall be transferred to the part purely economical, and be there *registered* as an IMPROVEMENT of the established practice.

The BUILDINGS of the two farms to be diffinct. Those of the economical, the ordinary farm buildings which may be supposed to be on the premises. Those of the experimental to confist of

A FARMERY, or regular fuite of farm buildings, on the best plan, and in the best flyle of rural architecture, at prefent known; endeavouring to unite, as far as fituation and materials will permit, fimplicity and conveniency with cheapness and durability.

A REPO-

A REPOSITORY OF IMPLEMENTS, and MODELS of farm buildings, fences, gates, &c. Not the ingenious fabrics of theory; but fuch as are admitted into the established practice of the different districts of the island; or fuch as have been, otherwife, fully proved, by a continued course of practice : in order, that, by bringing the whole under the eye, tegularly arranged and duly claffed, their comparative merit may be more readily afcertained; and the judgement be, of courfe. affifted, in felecting fuch as may be best adapted to a given foil and fituation. With a MANUFACTORY OF IMPLEMENTS; for the more easy diffemination of those which are already proved to be fuperiorly uleful; as well as for the conftruction of fuch NEW IMPLEMENTS as invention may fuggeft. And with a TRIALGROUND adjoining; for the purpose of tefting new implements (when no other ground may be at leifure), and for regulating, and fetting to work, those to be transferred to distant districts; that less impediment may arife when they reach the intended places of practice.

An EXPERIMENTERY, for analyzing soils and MANURES, investigating the VEGETA-BLE

BLE and ANIMAL ECONOMY; and, generally, for the ftudy of the more abstruse branches of the science.

A LIBRARY, for the reception of books on RURAL SUBJECTS; as well as of those on every other fubject, which may ferve to elucidate RURAL KNOWLEDGE.

A LECTURE ROOM, for the purpole of inftructing PUPILS in the PRINCIPLES of the RURAL SCIENCE; whether they arife out of NATURAL OF SCIENTIFIC KNOWLEDGE.

The PROFESSORS, requisite to fuch an eftablifhment, would be a PRINCIPAL, to form and conduct, with fuch ASSISTANTS, as circumftances would readily point out, when the fcale and the departments were determined.

But, Who would wifh to have fuch an incumbrance upon his effate ? and, What individual would be at the expence of fuch an effablishment ?

Such queftions would be futile.

Rather let it be afked, Who would not wifh to have the rural knowledge of the island collected upon his eftate ? and, What liberal mind, especially if bent to agricultural purfuits, would not be gratified in seeing improvements, in the first art and science the human human mind can be employed upon, growing daily under his eye? and, What man, who regards the interest of his family, would not wish to see the best cultivated farm in the kingdom upon his eftate; and, of courfe, in due time, to be in poffession of the best cultivated eftate in the kingdom ?

This, alone, might be a fufficient recompence for the original expence; which would, in all probability, be repaid, with ftill greater interest, by the PUPILS which such an establifhment would, with a degree of moral certainty, draw together.

The prefent premium given with a farm pupil to an individual, varies with the ability or character of the tutor, and with the treatment the pupil expects to receive. The ufual term is four years, and the premium forty to two hundred pounds. With the first, they are treated as a fuperior kind of fervants; with the latter, as affiftants.

What man, whether of the fuperior clafs of yeomanry or tenants, or of the fuperior class of tradefmen or others, who are now bringing up their fons to hufbandry, would not, after his fon had gone through a courfe of private tuition, and received the rudiments

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ments of instruction, from himself or some professional friend, with to perfect his education in a public feminary ;---where he would have, not only an opportunity of feeing BRAC-TICE in its highest state of improvement, and of conversing with PROFESSIONAL MEN of the most enlightened understanding; but where he would be duly initiated in the THE-• ORY of rural knowledge: in the method of making, registering, and observing the refult of EXPERIMENTS; of alcertaining the natural qualities of soils and MANURES; of improving the varieties of CULTIVATED CROPS, as well as of afcertaining the inherent qualities, and improving the various breeds, of LIVESTOCK; where he would fee order and fubordination, and learn the proper treatment of SERVANTS; and among a variety of other branches of uleful know-"ledge, the form and method of keeping farm ACCOUNTS, and of afcertaining, with accuracy, the profit or lofs upon the whole and every part of his business; confequently, of bringing it as nearly, as in its nature it is capable of being brought, to a degree of certainty.

Vol. I.

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And

And what poffeffor of landed property would not wish to have the heir of his estate initiated. at least, not in the management of ESTATES only, but in the proper management of FARMS; without a knowledge of which, no man can be a judge of the proper management of an estate : a part of education, as effentially requisite to an heir of landed property, as the acquirements of political knowledge are to the heir of a kingdom. Indeed, the more immediate happiness of a principal part of every nation depends rather on the poffeffors of eftates, than on the poffeffor of the crown. And it is a fact incontrovertible. that, in either cafe, the respectability and perfonal happinels of the poffeffor will ever be reciprocal with those of the people; on which alone they can be built, with firmnels and full fecurity. Surely, then, a branch of knowledge, which naturally leads the poffeffor of a landed eftate to live in the hearts of his tenants, can be no mean acquirement.

WORKMEN.

II.

WORKMEN.

DAY LABOURERS may be faid to be fcarce, in this diffrict.

Nevertheless wages are moderate. In regard to difpatch, they are much below par; and in what may be termed the honest pride of workmen, very deficient.

The YEARLY SERVANTS are, of course, proportioned to the number of labourers in the given neighbourhood.

Their wages are very low. Seven or eight pounds the ordinary wages of a man fervant; ten pounds the higheft. A woman three guineas. Not much more than half the wages given in Yorkshire. But a want of exertion, and an extravagance in keep, especially in *beer*, more than counterbalance the disparity in wages.

The ridiculous cuftom of the cider country, in regard to a fuperfluity of beverage, has K 2 been 132

been feen in the Rural Economy of GLOCES-TERSHIRE. A cuftom, equally abfurd, and much more *extravagant*, prevails in the MID-LAND DISTRICTS,

In the cider countries, in a cider year, the actual cost is inconfiderable. But here the enormity of extravagance is annual, and in a degree certain. The price of malt is much lefs fluctuating than that of apples and pears.

The quantity of liquor wasted may be somewhat less, here, than in Glocestershire: but in quality and in cost of the beverage of farm labourers, this district far excels every other: fee MIN. 22.

The TIME OF CHANGING fervants, here, is Michaelmas.

The places of hiring, "ftatutes."

For a description of *Polefworth flatute*, see MIN. 11.

'For calculations and remarks on beer, fee MIN. 22.

For inftances of allowing labourers to plant *potatoes* in the nooks of arable fields, fee 44.

For inftance of labourers being allowed half the crop of *potatoes* for cultivating it, fee 63,

For

For an inftance of the *bard living* of farm labourers, fee MIN. 94.

For the inconveniency of farm labourersliving at a diftance from the farm, fee 101.

For a rare inftance of ftrong natural ability, industry, and honesty, being united in a farm labourer, fee 117.

with the Lochsell on

BEASTS OF LABOUR.

See fiel only lowerer, is not thing excraves are than the ... 21 expense. A thow traves are than to be teen, unled the holfs

HEAVY HORSES have been, time immemorial, the beafts of draught of this diffrict.

Of late years, however, fome few OXEN have been worked; and a fpirit for working them appears to be gaining ground, apace, among fuperior managers.

The HORSE TEAM of this diffrict is grown to a fhameful height of extravagance. The pride of fhow teams, a folly observable more or less in most diffricts, is here truly absurd. K 3 The 134 BEASTS OF LABOUR.

The first cost, the trappings, and the keep, are all equally out of character for *farm* horses.

A fashionable fixyearold horse cannot be purchased under thirty or forty guineas. Five horses are considered as a team. A show team, fit to be *seen*, cannot, therefore, be purchased for less than one hundred and fifty pounds.

The first cost, however, is not more extravagant than the annual expence. A show team is a shame to be seen, unless the horses have three or four inches of fat upon their ribs. To bring them to this exquisite state, they are of course limited in work, and unstinted in provender. "A strike a meal for fix horses is counted fairsh feeding." Two meals a day: fourteen strike a week; near two and a half bushels a horse a week!

The harnefs, too, efpecially the houfing, is truly ridiculous; at once expensive and unornamental: ftanding up aukwardly high above the back of the horfe; like the failfin of the nautilus; as if it were intended to catch the wind, and accelerate or retard the motion of the animal.

With

12.

With refpect to ATTENDANCE, however, the cuftom of the Midland Diftrict is economical, compared with the fouthern counties; where a man and a boy are allowed to each team of four horfes. Here, a man alone, ufually takes care of fix horfes (as a team and a faddle horfe): "a waggoner" and his "lad," frequently of two teams.

As a species of PROVENDER, beans are still in use; though not so liberally as they were formerly, when the fields were open, and beans of course more plentiful than they are now. They are pretty generally "kibbled" —that is, crushed in a mill; whether for old or for young horses. Barley which is not maltable, is fometimes given to horses; but it is not a favourite, or rather not a fashionable provender: it is apt to "tan" the horses! This, too, is frequently kibbled; and sometimes oats are crushed.

When *chaff* is not in plenty, all horfe corn ought, no doubt, in ftrictnefs of management, to be *crufhed*.

Another provender of horfes, which is in ufe in this diffrict, and in which, only, I have found it in ordinary practice, is "cut meat:" that is, oats in ftraw, cut into very fhort lengths, K 4 in in a chaff-box, and in a manner which will be fpoken of under BARN MANAGEMENT. This is an excellent horfe food, efpecially when hay is fcarce; being in itfelf both *bay* and corn. The cutting, it is true, is fome expence; but thrafhing and pilfering are thereby avoided.

IMPLEMENTS.

THE SPECIES OF IMPLEMENTS, requiring notice in this place, are, The Waggon, The Plow, The Harrow.

The WAGGON is noticeable on account of its aukwardnefs, clumfinefs, unwieldinefs, and all together, in the prefent flate of roads, its unfitnefs for a farmer's use: Its weight (with narrow wheels) a ton to twenty-five hundred weight. Its height, with the "geering" on, feven or eight feet (when empty !). The length

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of the body fourteen or fifteen feet: from tug to tail twenty, or upward !---The height of the fore wheels four feet nine or ten inches; without any infection in the body of the waggon to receive them ! No wonder it fhould require near an acre' of ground to turn it on; and **a** horfe or two extra to draw it.

The gawkinels of its construction originated, no doubt, in the depth of the roads, at the time it received its present form :---a tall waggon was drawn on its belly feldomer than a low one. But, now, when the roads are rendered more passable, a more convenient carriage ought to be adopted.

If any leading man would introduce the GLOCESTERSHIRE WAGGON, he might be rendering his country an effential fervice. The fuperiority of a waggon which, when loaded with a full harvest load, is not much higher than the prefent waggon of this district, when empty, could not fail of being readily feen *. The

• In this inland country, where *fail cloths* are not eafily had, and where *tilts* are not yet in use for farmers waggons, *bair cloths* are common, for covering body loads, or spread occasionally along the middle of a top lead. They come high, but are very durable.

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The old PLOW of this diffrict is fimilar to that of Glocestershire: a long heavy unwieldy implement: requiring five or fix horfes to work it. At prefent, the prevailing plow is the modern plow of Yorkshire; from whence it has not been many years introduced into this district: even the steep ridges of some of the common fields are now plowed, in common, with this light short plow and three horses.

But a still more modern invention is the DOUBLE PLOW: an implement which took its rife in this neighbourhood; and which has made the most rapid progress toward common use that any implement of husbandry, perhaps, ever did.

Every circumstance that less the expence of tillage, without lessening its efficacy, is of the first confideration in husbandry.

In Glocestershire, we have seen the excessive cost of plowing with an ill formed plow, and with five, fix, or seven horses to this one plow : a mode of tillage which heretofore has probably prevailed in most parts of the island.

In Norfolk, and in Yorkshire, we have seen this folly done away by a better constructed plow,

plow, and two horfes, without a driver. And in the MIDLAND COUNTIES we find the fame abfurd practice now under eradication, by five, or perhaps only four horfes drawing two plows, without a holder.

Double and even triple plows I have feen in ufe, many years ago, by a moft ingenious hufbandman, Mr. DUCKET of Surrey. Thefe were formed with a *crooked beam*, and kept in an upright position, fo as not to require a holder, by means of an upright fpindle, paffing through the end of the beam and the bolfter, &c. of a pair of common plow wheels : fuch as are in ufe for the Norfolk and the turnwreft plows.

About twenty years ago, a farmer of this neighbourhood fetched a double plow out of WORCESTERSHIRE: but this, as Mr. Ducket's, did not "fhift;" the bodies of the plows being fixed at fome certain diftance from each other, without any means of regulation.

The "DOUBLE SHIFTING PLOW" appears, evidently, to have been the invention (or rather perhaps an improvement of the Worcestershire, IMPLEMENTS

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ceftershire plow) of one Bush, a wheelwright of Hurley, in the north of Warwickshire, about seventeen years ago.

Some fourteen or fifteen years ago he advertifed it, and delivered printed directions for using it; but never had, I understand, a patent for it.

This BUSH is still (1786) the leading maker; but double plows, of his construction, are now made by all principal plowwrights; and may be faid to be in the hands of every farmer in the district, who has strength enough to work one.

The great merit of the invention lies in introducing the ends of the two beams into the axle, or what amounts to the axle, of the wheels. Thus giving at once firmnefs, fteadinefs, and truth to the machine; and, at the fame time, admitting of eafy means of regulating, at pleafure, the width of the furrows.

Its rapid progress into common use among farmers of every class, who work horses enow to draw one, is best accounted for, perhaps, in the circumstance of its meeting the approbation of the "waggoners," who, to a man, are partial to it; because it requires their whole team, and a long whip to drive it : while

while they as uniformly difapprove of whiprein plows; becaufe they break their team; wrefting part of their horfes from them; and fubject them, as they conceive, to the difgraceful tafk of both holding and driving their plow. And the farmers with good reafon approve of it; becaufe, in fome cafes, five horfes and one man, with a double plow, will do as much or nearly as much work as fix horfes, two plows, two men, and two boys, ufually do with fingle plows.

On ftraight even ridges, and level ground, the double plow makes very good work; but wherever the lands are crooked, or are wider at one end than the other, or the ground lies in hills and hollows, fuch work is frequently made, as a good plowman would, and as every farmer ought to be afhamed of.

However, in level work, when the land is 1 wet (and liable to be poached by horfes abreaft), the double plow gains an advantage over the two-horfe plow. Neverthelefs, it is allowed by men in this diffrict, who work both on a large fcale, that though the double plow may, in fome cafes, be used with fuperior advantage, two horfes abreaft are, on the whole, the most eligible plow team.

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13.

The fame principle of guiding by wheels, without a holder, has been of late years extended to the fingle plow. I have observed one man and a boy driving and directing two of these plows, with three horses at length in each. The man going first, and having guided his own plow at the end, and entered it fecurely, drove out the boy's team; and, having feen that fairly entered, ftept forward to his own. This method applied to two double plows (to which it is equally applicable) is reducing the manual labour of plowing to the loweft degree : one man and a boy to four plows : and, in a clean foil, in good working order, with a level furface and long straight parallel lands, good work may in this way be made.

The HARROW, which requires to be particularly noticed here, is one of very large dimenfions (as fix feet by five and a half, with five bulls and twenty-five tines) very heavy, and with the tines very long and ftrong, *bung bebind a pair of wheels*,—with fhafts, fimilar to waggon fore wheels—and with **a** "running bull."

This, in tearing up to the furface, and expofing there, the buried clods of a fallow, after after those on the furface have been reduced, is an excellent implement.

I do not mean to fpeak of a large fingle harrow as being peculiar to this diffrict; but I have not elfewhere feen it drawn with WHEELS; which bearing up the fore part, renders it much more effectual than when it has not this fupport.

Nor have I feen, in any other diftrict, the " RUNNING BULL;" an admirable part, whether of a fingle or the double harrow. It confifts, in the cafe under notice, of a ftring of iron, an inch or more in diameter, fixed on a crofs bar in the front of the harrow. reaching almost, but not quite, from fide to fide: the immediate corner of a harrow being an improper point of draught. On this bar or ftring of iron, a ring, with a chain paffing to the wheels, plays freely from end to end;-confequently whichever way the team turns, whether to the right or to the left, the harrow, by the point of draught being at liberty to shift from corner to corner, is not liable to be strained nor overturned; nor is the hind horfe fubjected to any unneceffary exertion at the ends.

A more

A more fimple, and equally effectual, method is to tenon the crofs piece, in front, into the two outfide bulls, leaving the inner bulls flort, fo as to admit of a large iron ring to play upon the crofs piece, made round and fmooth for that purpofe, with an iron pin a few inches from each end, to prevent the ring from running up quite to the corners; thereby giving, as has been faid, a more eligible point of draught.

For inftances of large farms having each a blackfmith's shop, see MIN. 48.

I4.

WEATHER.

THE BAROMETER is here in good efteem. I have found it nowhere fo well attended to as in Yorkshire, and this district ; and, what is observable, in these districts a general spirit of enquiry and improvement is singularly prevalent. For want, however, of paying due attention to ether circumstances

fances of the atmosphere than its weight, disappointment in the weather must of course frequently occur, in both districts *.

During my two years refidence in the MIDLAND DISTRICT, I paid an almost unremitted attention to this fubject; especially during the HARVESTING MONTHS of July. August. and September: in which I kept a REGISTER OF THE WEATHER, on the plan of that formerly kept in Surrey +; noting with fufficient accuracy the STATE OF THE ATMO-SPHERE, with refpect to its weight, moisture, beat, motion, and appearances; with the quantity of rain, or, more generally, the STATE OF THE WEATHER, which refulted each day from the prefent and preceding state of the atmosphere; the only philosophical basis on which to found a foreknowledge of the weather.

Beside these registers in summer, I marked the progress of spring, and caught the characteristics of seasons; such as, having feldom occurred, require to be registered.

I therefore collect the whole together in this place; thereby rendering them more wfeful than they would be in detached Mi-

Vol. J. L nutes.

* See YORK. ECON. Art. WEATHER.

• See Experiments and Observations on ACRICULTURE and the WEATHER. nutes. Befide, the reader may, in this form, read them, or pafs them over, as inclination may direct. I publish them the rather, as they contain a kind of information which, though not difficult to collect, requires a degree of attention and perfeverance, to which few men, who are not immediately interested in the quality of feasons, would subject themfelves; and still fewer, perhaps, of those who are, have leisure and *patience* enough to go through so tedious an employment; or, if they should, have not perhaps an opportunity of stendering their collections useful to the public.

SFATFOLD, APRIL 28, 1784. The weather of laft fummer was extremely hot; as hot, perhaps, as has been known in this ifland; more *difagreeably* hot than I remember to have felt it in the Weft-Indies.

The 28th July the thermometer got up to 87° of Fahrenheit : the 2d August, at twelve o'clock, in a north shade, it rose to 89‡° : at half past twelve the same day, to 90 degrees*! Autumn

* The first position I took mysclf: the two last were taken by a man on whose accuracy I can fasely rely. I saw the thermometer, presently after, in the situation in which they were taken: a fair north shade: no reflection to add to the natural warmth of the atmosphere. I register

Autumn was moderate; but winter and early fpring extremely fevere.

On Christmas-day a frost set in, which lasted without intermission (a day or two excepted) until the 20th February. An EIGHT WEEKS FROST; with one of the deepest falls of show that can be remembered. In some parts of Yorkshire the distress for fuel was such as has feldom, perhaps, been experienced, in any country.

Laft month, as well as the prefent, have been uncommonly cold and peevifh: this far, the backwardeft fpring I have known. The hazel did not begin to blow until the fecond week in March; and continued to blow until the middle of April!

It feldom happens that there are not a few genial days, in February or March, to bring out fome of the earlier plants; but this year, even the coltsfoot and dwarf deadnettle did not begin to blow before 6th April ! nor did the großberry foliate until the 18th April ! and the hawthorn hedges are ftill as naked as they were at Chriftmas.

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Extra-

I register this incident the rather, as it evidences a degree of heat which, I believe, the atmosphere of this island rarely acquires.

WEATHER.

Extraordinary ! the fwallow, this year, returned, and the großberry foliated the fame day ! and notwithstanding the backwardness of fpring, the cuckoo began to call the 26th April, in a cold fharp white-frosty morning.

How various are the circumstances attending the progress of spring, in different years ! in 1779, the großberry foliated the 20th February, and the swallow did not appear until the 8th May *.

PROGRESS OF SPRING 1784 +. Hazel blowed March-April ! Großberry foliated 18th April ! Swallow returned 18th April ! Cuckoo began to call 26th April. Sallow blowed 27th April ! Poplar in pride 7th May. Hawthorn foliated 9th May. Blackthorn blowed 11th May. Fine-leaved elm foliated 13th May. Oak foliated 18th May. Afh foliated 24th May.

- Hawthorn blowed 31st May. Wheat shot into ear 20th June.

JULY

* See Norf. Econ. ii. 337.

+ In this neighbourhood : an early fituation. See page 5.

MIDLAND COUNTIES. 14.

JULY 9. The first week in May fummer fet in; fo that, this year, there was no palpable progression of spring : it might be faid to be winter one day and fummer the next. Vegetation broke forth at once with unufual vigour. During the principal part of May, and the first three weeks of June, it was rapid, perhaps, beyond example. But toward the wane of the month, either through too much moifture and coolnefs, or from the powers of vernal vegetation having exhausted themfelves, there was an evident check in vegetation, especially of grafs. About the first of July the rains took up, and dry weather gave, at length, a loofe to haymaking.

AUGUST 1. The first eighteen days of July were fine; excepting a thunder fqualt in the night of the eighth : the latter part of the month a continuance of wet weather.

The inferences refuting from the last month's REGISTER OF THE WEATHER are thefe * ;

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* I forbear to publish the register at large, lest it fhould be confidered as an incumbrance to the generality of readers, to whom it would not be ufeful : the inferences, drawn at the time, will be of more general utility. \$ 26.2 15

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The barometer, during the former part of the month, was truly prognoftic; portending the thunder ftorm with fufficient accuracy. But, during the rains at the close of the month, the barometer viewed feparately, was deceptious; continuing at or above par, during the rainy weather. On the 30th, when a very heavy rain fell, it rofe two degrees *.

But the bygrometer was, at that time, in the • extreme of moiftnefs. Therefore, the inference to be drawn, in this cafe, is, that 1° heavy is not able to fupport a very moift atmolphere: for, by the appearances, it was as moift upwards, as it was near the earth. But rifing yesterday to 3° and today to 4°, the rain has ceased; notwithstanding the hygrometer and appearances remain moift.

The thermometer continued above par all the month: even during the rain it was 1° warm; and, on the hotteft days, not more than 4°.

The

• The feveral inftruments are graduated in this manner: the extreme points being afcertained, the mean between them is taken as par; from which ten equal degrees are marked toward each extremity. See EXPERIMENTS and OBSERVATIONS on AGRICUL-TURE and the WEATHER, page 115, and the PLATE of INSTRUMENTS there given.

The wind, during the former part of the month, kept to the northward of weft; excepting two days preceding the thunder: ftorm, when it got back to the fouthweft and the fouth : but what is remarkable, the rain; came with a ftrong northeaft wind : and what is not lefs obfervable, the heavieft. of the rain, at the close of the month, came with the wind at fouth and a foutheaft.

Appearances, whether in high day, or at the clofe, were fingularly confiftent. Streamers ("mare's-tails," Surrey — "filley-tails," Yorkfhire—"hen-fcratlings," Midland) and with fmall livid clouds failing beneath them, were uniformly prognostic of foul or fhowery weather. The fetting fun might be faid to be truly prognostic throughout. Brightnefs or with a degree of rednefs preceded fine, foulnefs or broken watery clouds portended foul weather *.

L 4

AUGUST.

• It must be observed, however, that I was frequently deprived of the advantage of seeing the immediate setting (the great thing to be depended upon) through the want of a sufficiently clear horizon. A serious inconveniency in the situation of a farmery. August 12. An hygrometer in the houfe is not, invariably, a guide to the moisture of the air in the field.

Yesterday, two hygrometers, in the house, though exposed to a thorough air, stood at. 7 to 8° moist; while hay spread upon the ground, as wet as rain could make it, dried. fufficiently to be carried (à la Midland) about three o'clock in the asternoon.

To prove the comparative flate of abforbency of the air within, and that without, placed one of the inftruments in the openair: it fell 5 or 6° in about an hour; while that in the house remained unmoved.

In this cafe, the probable reason of to great a disparity, was the local dampness of the fituation in the house; caused by the unusual dampness of three or four days preceding; and which had not yet had time to escape.

AUGUST'14. The ftring of a hygrometer fhould be gently ftretched, before the true ftate of the moifture of the atmosphere can be afcertained by it: more especially after the air has been remarkably moift, and is growing drier.

Notwithstanding the air, to day, is as dry as fun and wind can make it, and, to common appearances, appearances, as dry in the house as in the field, the hygrometer in the former stood at 3° moist.

Being impatient to fee the index fall, I preffed it down gently with the finger, fome two or three degrees; and, to my funprize, it ftood there. I then forced it down ftill lower; where it refifted the preffure, and, on being fet free, role deliberately to fomewhat above par; where it ftill remains.

This incident led me to another infrument, placed in the fun and wind; and which flood at 4° dry: but after forcing down the index to the firetch, below the extreme point, it refted, and now ftands, at almost extreme drynefs.

Exceffive moisture, on being dryed up, leaves behind it a gumminels (especially perhaps in a linen substance) which the weight of the index is not able to overcome. It is, therefore, as necessary to prefs down the index of a cord hygrometer, as it is to tap the case of the barometer.

AUGUST 15. The air is at length become thoroughly dry, as well in the house as in the field,

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One hygrometer placed in the wind and fun (very warm; 89° in the fun; 77° in the fhade) dropt to 8° dry. Removed it into the fhade, but full, as before, in the wind,—it remained flationary for fome time: but afterwards funk $\frac{1}{2}$ ° ftill lower. Replaced it in the fun: no perceptible variation took place.

A proof that the *fun*, when the *wind* is abforbent, is of little or no use in the *drying* of vegetable substances *.

Another, which remained in the houfe, fell equally low ! and, on returning the portable one to its place in the houfe, it did not rife even a hair's breadth !

Proofs that when the air is highly abforbent, it has the property of drying quickly and thoroughly, without either wind or fun.

SEPTEMBER 1. The REGISTER OF THE WEATHER OF AUGUST affords few inferences.

The month confifted of a mixture of fair and showery weather; with one heavily rainy morning. Seventeen fair days; fourteen more or lefs rainy.

The

* Nevertheless in what is termed the weathering of ing, &c. the fun may be most effective. The barometer varied from par to 4° heavy; and, on the whole, acted with great truth; the 6th it got down to $\frac{1}{2}^{\circ}$ heavy; the attendant circumftance was half an inch, at leaft, of rain : the 28th it flood at par; and the eftimated quantity of rain not less than a quarter of an inch. The 31ft it likewise got down from $1\frac{1}{2}^{\circ}$ to $\frac{1}{2}^{\circ}$ heavy; another quarter of an inch of rain fell.

The bygrometer did not act, last month, with equal sensibility. The former part of the month it was, in general, extremely moist: though we had several fair days: to its credit, however, we had sew bright days: a fort of sense, gloomy, overcast weather. The latter part of the month, from par to 50 dry: with nevertheles, a similar kind of atmosphere.

The *thermometer*, chiefly, from par to 2° warm.—The 15th it role to extreme heat; with no remarkable attendant or confequent circumstance.

The wind varying. Upon the whole, and in almost every instance, north of west brought fair, south of west rainy weather: 5° due west brought light flying showers.

Appearances have been deceitful: even ftreamers with underfailers paffed off without 756

out rain; were in one inftance fucceeded by a fingularly foorching hot harveft day. The fetting fun, however, faved its credit; portending, with its wonted faithfulnefs, the quality of the coming weather: in the inftances, I mean, in which I had a full opporunity of observing its appearances.

Upon the whole, notwithstanding the changeableness of the weather, the indecifiveness of the instruments, and the inconsistency of common appearances, I have not, resting my judgement on the mass of information, committed one effential error, in the course of last month.

OCTOBER 4. From the first to the nineteenth of last month, hot parching harvest weather. To this succeeded ten days of showery weather; but not settled rain: and to this a week of very fine settled weather for the seafon; and this notwithstanding some severe white frosts: a rare incident.

During the eighteen days fettled fine wea: ther, the *barometer* and *hygrometer* were unanimous: the former varying from $1\frac{1}{2}^{\circ}$ to $3\frac{1}{2}^{\circ}$ heavy; the other, from 2° to 6° dry. During the ten days flowery weather, the barometer kept below par; but the hygrometer remained remained stationary. Hence, perhaps, we may fay, the weather was only showery, not rainy: and that the barometer recovering its elevation, and the air of course its weight, the weather, in consequence, became fair and firmly settled.

With respect to appearances, it is observable, that during the fine weather in the former part of the month, the fun frequently set with a degree of soulness; occasioned, however, principally by that species of smoker-NESS which is frequently seen in droughty seasons; and which was so memorably confpicuous, throughout Europe, I believe, in the dry summer of 1783.

After the whole of this fummer's experience, I can fay, what I may not be able to repeat the next, that I have not, generally speaking, been once *deceived* in the weather; that is, I have not once been *caught* in the rain, either in hay or in corn harvest.

OCTOBER 13. A remarkable incident ! Today, there has been two or three finartifu showers; with the barometer at 4° heavy, the bygrometer at 4° dry, the thermometer at temperate, and the wind at due north ! In this inftance, inftance, appearances alone portended them. Notwithftanding the barometer and hygrometer have been ftationary for near a fortnight, with a remarkably bright fine atmofphere, this became, the day before yefterday, loaded with large heavy clouds, with fmall livid fpecks failing beneath them; and yet without any alterations in the weight, moifture, heat, or motion of the air, at the furface of the earth. This, though no general inference, perhaps, can be drawn from it, appears to me an interefting fact. The quantity of rain has not been great, but what fell came down freely, and from a loaded atmofphere.

NOVEMBER 18. From that day, the feafon continued remarkably dry for more than three weeks. Wheats, which were fown the beginning of October, lay in the ground a full month, before they came up fo as to meet the eye. The ground remained as dry as in any part of fummer : even the fallows of the common fields have been, until about a week or ten days ago, too dry and cloddy to work; and whole ground much too hard to be plowed with propriety.

The

The night before laft there was thunder and lightning ! with a deluge of rain in the morning. Yefterday fine, and part of the night frofty; but, this morning, the rain returned, and has continued all day, raining very hard; with every appearance of a rainy feafon being fet in. Neverthelefs, the barameter ftands between 1° and 2° heavy, and the kygrometer between 2° and 3° dry !

This rain, perhaps, may be accounted for in the lightning and the *wind*: which for the laft week has been wefterly and ftrong; bringing with it a fucceffion of heavy clouds from the fea. But the wind is now northeaft; bringing back the vapours, perhaps, in a compressed ftate, arising from this contrariety of winds.

JANUARY 19, 1785. The fecond of December a froft fet in, hard enough to ftop the plow; which has ftood near feven weeks frozen in the foil: yefterday being the first day (notwithstanding we have had a fingularly mild muggy air for the last ten days!) on which it could be fet to work with propriety.

This has hitherto been an old-fashioned winter : frost and snow setting in, as of yore, before

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before Christmas. But so much severe weather before that time has feldom, perhaps, happened in any ege. A man who can recollect fixty years, does not remember a fimilar instance.

It is remarkable, that the barometer role during the thaw. The 5th and 6th, when it froze feverely, the glass was below par; the 9th, the air peculiarly mild and muggy, it ftood firmly between 3° and 4° heavy; and the 10th, role, during the same moift state of the air, to $4\frac{1}{2}$ ° heavy! It is observable, however, that no rain fell.

FEBRUARY 10. Yesterday, during a hard frost, the *barometer* stood at 1° heavy. Today, it has got up to 4° heavy, for a drizzling mild rain !

FEBRUARY 20. About a week ago the barometer flood at 2 to 3° heavy: the air frofty. But the air becoming mild, with a drizzling rain, it role (while it actually rained) to the unufual height of 7° heavy !

It has fince kept lowering gradually: the weather mild; with every appearance of a fall of rain. But inftead of this a finart fhower of fnow took place; clearing up with a frofty air; air; freezing most intensely all night, with the barometer at par; at which it still remains : though last night, at fix o'clock, the thermometer got down to 20° (of Fahrenheit), and at nine to below 16°, the lowest I remember to have feen it *.

APRIL 24. The feafon ftill dry: not one-tenth of an inch of rain has fallen fince the froft. Neverthelefs, the earth, even to the very furface, is moifter than it was forme weeks ago 1 and this with the air at the extreme of drynefs! Oats come up as quick and as ftrong as if the ground were full of rain ! and the fprings are all alive.

MAY 8. The barlies and the late-fown oats produce a motley fight; appearing in blotches: half up, half in the ground, as dry as when they were fown.

MAY 17. Last night fell the first shower of rain we have had this spring. And even this is too inconfiderable to bring up the latefown crops.

JUNE 1. At length we have had fome cool dropping weather; but yet no quantity

of

* Yet during this paroxylin of frost the barometer funk to 2° light! In winter, the weight of the air · should feem to have no influence on the weather.

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of rain. That which has fallen, however, has been fufficient to roufe a principal part, at leaft, of the latent barley.

JUNE 30. The last winter and spring have been strongly marked; and the summer continues no less extraordinary. The frost, taken altogether, unufually long and sovere; with but little snow; and this little drank up by the sun, or diffipated by the dryness of the atmosphere; a very small portion of it penetrated the soil. Yet not one drop of rain (fome drizzling showers excepted) from November until the latter end of May, when the ground was moistened nearly plow deep. But, from that time to the prefent, the weather has been uniformly dry, and often excessively hot!

The early part of this fpring advanced more flowly even than that of the laft. For although it made an effort about the 20th of March, froft and fnow returned the 22d, and continued till the beginning of April. The coltsfoot did not fhew itfelf before the 5th of April; nor the pilewort difclofe its bloffoms till the 6th. And those of the bazel were never confpicuous: it might be faid to blow about the first of April. The großerry did did not foliate till the 16th; before which I faw two fwallows nefting !

PROGRESS OF SPRING 1785. Hazel blowed about the 1st April. Fieldfares finging their parting fong 6th April[•].

Water martins nefting 13th April. Swallows nefting 14th April. Grofberry foliated 16th April ! Sallow blowed (a pale fickly colour) 16th April. Hawthorn foliated 26th April. Poplar in pride 26th April. Female wafps 26th April.

Cuckoo-uncertain-Blackthorn blowed 5th May. Oak foliated 12th May ! Ash foliated 24th May ! Hawthorn blowed aft June! Wheat shot into ear 24th June.

The foliation of trees was, this fpring, fingularly rapid. The elm, the maple, the fallow, &c. &c. and the oak! were all in a state of foliation at the fame time ! the 7th May.

But the most observable circumstance in the progress of vegetation, this spring,-was the

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* But though in full chorus on that day, they did not take flight till some time afterwards.

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the early foliation of the oak, compared with that of the a/b, and the blowing of the bawthorn: the all near a fortnight, and the hawthorn near three weeks, after the oak !

It is likewife remarkable that the meadow trefoil (the wild red clover) blowed, this fpring, with the meadow foxtail and vernal! beginning to blow the 12th of May: actuated, probably, by the fame law of nature as the oak: both of them tap-rooted, deepftriking plants: while the afh, the hawthorn, the foxtail, and the vernal are merely fibrous, and feed, comparatively, near the furface. Hence, admitting the principle of vegetation to be merely that of comparative rarefaction, thefe extraordinary circumftances may be accounted for in the different ftates of the earth and the atmosphere, at the time these circumftances took place.

AUGUST 1. REGISTER OF THE WEATHER in JULY. Much thunder, with heavy flowers; but no long continuance of rain.

The barometer wavering from $2\frac{1}{2}^{\circ}$ heavy to 2. light; hovering much about par: of course no dependance could be placed in it, separately considered.

The hygrometer uniformly dry; varying from 4° to 8°. Hence, perhaps, no continued tinued rain. None fell but what was provoked, or ftimulated, by thunder and lightning; which, frequently, were not able to fhake down a fhower: owing, probably, to the drynefs of the atmosphere. I never experienced the use of the hygrometer fo much as I have done last month.

Thermometer, uniformly warm : the air fometimes very hot : so high as 78° of Fahrenheit.

The wind various: the rain came chiefly with the wind at fouthwest, or west. Thunder passed off without rain, with the wind at north.

Appearances. Large dark indigo-coloured clouds portended approaching thunder. Livid clouds, forming whirlpools on a filvery ground, immediately preceded remarkably vivid beautiful lightning; running, ferpentinely, along the face of the clouds. The fcenery and the mufic equally fublime!

AUGUST 7. On Wednesday last, the 3d of August, ended the DROUGHT OF EIGHTY-FIVE.

Prior to that, partial thunder fhowers had quenched particular fpots; but no general rain took place, in this part of the M 3 island, WEATHER.

island, till that day;—when an inch of rain, at least, fell. This, with some showers, before and since, have moistened the soil to the bottom; and fully satisfied the farmers; who are now calling out for fair weather, to get in their harvest.

A "DRY SUMMER" is a phenomenon to the middleaged men of this country. Old George Barwell • (feventytwo) fays no man who cannot recollect forty years can know anything of "dry fummers:" about forty or fifty years ago, he fays, there were three or four dry fummers, nearly fucceeding each other; and speaks of one about twenty years ago: adding, that he never knew a dry fummer which was not preceded by a fevere winter, and fucceeded by great crops. He foretold with great confidence, early in the fpring, the drynels of this fummer : faying that he did not remember an inftance, before laft year, of a long froft without a dry fummer to succeed it +.

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* See MIN. 117.

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† This year; 1789, is another exception. Last winter was remarkably dry (see GLO. ECON.) with a very long frost; and this summer as remarkably wet. Not

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The fummer after the "nine weeks froft," he fays, was dryer than this has been; and the crops of that fummer, particularly the wheat, did much worfe, than they have done this; owing chiefly to its being more injured by the froft. The price, the enfuing winter, got up to nine shillings a "ftrike" (a bushel). But 'the next year's crop was fo profuse, it got down to half a crown! and continued low for feveral years afterwards; the crops being remarkably good : owing in part, he thinks, to the frost; but still more to the drought. He feems to confider the rays of the fun as a species of manure !

Be this as it may, his natural understanding is remarkably strong, and his observaset ctions '

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more than three weeks or a month's harveft Weather, for both hay and corn. The early cut grais and the late ~ cut corns were in a manner wasted.' Summer stoods were perhaps never more mischievous. In going down into Leicestershire, in July, I faw not only hay cocks. but waggons, floating in the meadows. And in returning, in October, by the way of Oxfordshire and Berk- ! fhire, the bean crop almost entirely, and much barley were still out. And by authentic information from Yorkshire, the fame crops were then in a fimilar state, in November! when, on the lower lands, little wheat had been fown; nor any profpect of fowing it,

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tions on rural matters generally clear, and frequently just.

To the DRY SUMMER OF EIGHTYFIVE I have paid fome attention; and it may be right to preferve fuch particulars refpecting it as are now fresh in my mind.

It was preceded by a continuance of frost without fnow; a remarkably dry winter; and by the other circumstances of the weather above recited.

The attendant circumftances, befide those of the weather which appear above, were,

An overabundance of infects : the oak and the apple tree have been in a manner disfoliated by a caterpillar (fee MIN. 150.) The turnep, too, befide the beetle and the tenthredo, has been pestered, this year, by a new enemy-the bug (fee MIN. 61 and 84). But, what is observable, the chafer (the common brown beetle) fcarcely made its appearance, in this district .

Vegetation, in the early part of the fpring, though the ground was fufficiently moift, was in general weak; owing principally, perhaps, **t**9,

* See MIN. 147.

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to night frost; and, in the later part of spring and in summer, it has been unable to exert itself; the subterraneous moisture being exhausted, without being replaced by a supply from the atmosphere.

Pasture grounds were, of course, bare, and meadows short. Nevertheless, it is observable, that

Cattle, were their pafture ever fo naked, looked fleek and healthy. But, unlefs where ground was underftocked, cows gave little milk, and "feeders" gathered little fat.

Even horses were distressed for want of water. See MIN. 58.

Sheep alone did well. In a moist country, dry weather is favourable to sheep. It raifes them to their natural situation.

Wheat, injured by the froft, got thin upon the ground, in the fpring: in fome places, fo "gally"—fo full of bare patches—as to be fcarcely worth preferving as a crop.

Spring corn, in general, came up partially. Some, however, fown early and immediately after the plow, came up well together, and preferved a pretty good ftrength of vegetation.

Plantations, and fresh-planted hedges, fared extremely ill. The frosts continued late; and and were immediately preceded by dry parching winds. See MIN. 148.

Fires were never fo frequent : no lefs than two villages have fuffered almost total destruction in the Midland Counties alone !

No thunder until last month, when it became very frequent: otherwise, in much probability, we should still have had a continuance of drought. For, generally speaking, we have had no rain which has not been shook down by thunder and lightning.

The barometer has been no certain guide to the weather. Thunder, alone, feemed to prefide in the atmosphere.

Drinking pits were, of courfe, dry: many fprings the fame: and rivers, in confequence, unufually low. Millers, perhaps, never experienced a greater want of water than they did for fome time before the late rains brought a fupply to their pools. Even the

Price of wheat was affected by the circumftance: their mills being full, and their purfes empty, the markets became crouded with famples, and a fall in price the natural confequence.

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14. MIDLAND COUNTIES.

A remarkable full in the price of liveflock. In the fpring, flock was unufually dear : not nearly enough in the country to fupply the cravings of the graziers : owing, perhaps, not more to a real fcarcity, than to a fucceffion of good grazing years. The rage for ftock did not abate until the middle of May, when lean cattle began to drop, and continued falling in price until Tamworth fair, 26th July; where ftore cattle could not be fold at any price. Even pigs, which four months ago were worth fifteen shillings a piece, might, a'fortnight ago, have been bought for ten. Horfes, too, fell from the clouds. Sheep alone kept up.

The confequences, so far as they are yet unfolded, are,

Fallows appear to have received an extraordinary degree of melioration. The turnep fallow of No. 2. is in a ftate of tilth (friability, mellownefs) in which I have not, I think, feen plowed ground before; owing, perhaps, not more to the drynefs of the fummer, than to the froft in winter, when it lay in ribs, or narrow fingle-furrow trenches. The rootweeds appear to be totally annihilated; and the feeds

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feeds of weeds, unlocked by the pulverization of the foil, and now fufficiently moiftened by the late rains, are fpending themfelves: the furface green with feminal weeds.

Fallows that have this fummer received tolerably good management, will, it is highly probable, communicate a degree of fertility to the foil for fome years to come; and it is equally probable, that foils not in a flate of fallow will receive a fimilar degree of improvement, from their texture being broken by the froft, and their crudities drawn out or corrected, to an unufual depth, by the fun. I fpeak more particularly of ftrong and middle foils. There is indeed an idea, which is probably of ancient date, as it has grown into a maxim, that "a dry fummer was never bad for England $*_i$ "

No turneps, except a few patches which were fown early, when the fpring moifture was not yet exhausted, and when their energy mies—from what cause is a mystery—per-

haps

• The fummer of 1786 I fpent in London, and cannot fpeak, from my own observation, of its crops. The fammer of 1787 shewed such a strength of vegetation as I never have, in any other fummer, observed. See XORG, ECON. v. i. p. 289, haps for want of a fhower to affift their exclusion—fuffered the plants to rife without a check. But the middle and the later fowings have been cut off wholly by the *beetle* and the *bug*; which would not fuffer the *caterpillars*, though numbers of flies were among them, to partake of the fpoil; the plants being commonly devoured before the eggs of the tenthredo had time to be matured. I found one nearly ready for exclusion, and another half naked in its nidus; part of which had been devoured by the rapacious beetle.

A fearcity of hay. Not one fourth of a common crop; including both meadows and upper lands. See MIN. 56.

An unevennefs in corn crops: occafioned by the wheat being injured by the froits; and the fpring corn rifing partially; through a want of fufficient moifture, at the time of fowing; appearing, throughout fummer, in two or perhaps three crops.

A plumpnefs of grain: especially of wheat, and of oats that were fown early *.

A fearcity

• Mr. BAGE, of Elford, on whole accuracy I can rely, mentions a remarkable circumstance respecting his wheat; which, this harvest, is so full in the car, that while

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A fcarcity of cheefe. Not more, perhaps, than two thirds of the common make of factors cheefe will go to market.

A fearcity of fat cattle. It is probable that half of the "feeders" in the diffrict are not of more value now than they were when turned to grafs; and ftill more probable, that not one in ten is what is termed good beef. See MIN. 53.

Upon the whole, this dry fummer is likely to produce, in the first instance, a very bad year for farmers; and all the consolation they. have at present, is the hope of a succession of better crops in future *.

AUGUST 21. The laft fortnight has been almost continually rainy! no possibility of carrying corn, in tolerable order, until today. And this day happens to be Sunday +! Took

while the firaw was yet underripe, the grain, affifted by the late flowers and gleams, burft its bounds, fhewing itfelf to the eye as it flood upon the flalk; and fhedding, in the act of reaping, a quantity nearly equal to the feed fown !

* Great quantities of *mu/brooms*, and of *wa/ps*, were other confequences of the dry fummer of Eighty-five.

Nevertheleis, fome farmers in the neighbourhood,
I find, had good fenfe aud gratitude enough to fecure
confiderable part of their wheat crops.

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Took a ride in the morning to fee the flate of the corn crops. The wheat, mostly cut, and almost all standing in "shuck," except a few loads carried last night. Barley :-- a good deal down, and very much discoloured, and fome beginning to "fprit." Crops, in general, thin; in the common fields very thin; - barley, on a par, not half a crop. Oats :-fome carried : many down : ftraw much injured : crop very bad :--especially in the common fields, fcarcely worth mowing : the oat crop throughout not half a common. crop. Beans :- moftly down. Crop, execrable! not beans, but the ftraw of catlock : whofe feeds would lie thick enough to hide the furface, had not part of it been swallowed. before the rain, by the fiffures or cracks; running down, perhaps, fome feet deep! Yet fucceeding generations may wonder how it came there.

AUGUST 30. •Yesterday, in much probability, the barometer and bygrometer were instrumental in faving three times their cost. I had fome wheat to carry, and fome barley to mow. The wheat was in fine order, except the immediate buts of the structures; which, being fet up when the ground was moiss, the bottoms 176

bottoms remained damp and dirty; the ftraggling ears which happened to touch the ground being fome of them damaged. It was therefore proper that the fhucks fhould be laid open, and the buts aired, before they were carried; and my original intentions were to have mown barley in the morning, and to have carried wheat in the afternoon; allowing the buts and the inner fides of the fheaves all the forenoon fun and air to dry them.

The three preceding days had been tolerable harveft weather, and the early part of the morning was bright and fine : general appearances, then, befpoke a fine day. But the barometer, though high $(3\frac{1}{2}^{\circ}$ heavy), was finking : the bygrometer getting moift. The preceding morning had been marked by a white froft (the first this autumn), and the canopy the two preceding days had been frequently fcattered with streamers. The *fun*, too, began, as the day advanced, to lose its fplendor, and to play at hide-and-feek among the clouds.

I therefore, at length, concluded to fecure the wheat; fending a boy before to open the fhucks, by laying the fheaves down gently upon

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upon their backs : by which means most of the buts had two or three hours wind and partial fun to dry them; and the ears having been uncapped the day before, the whole was carried in good order.

The last load was barely in the barn when It began to rain; it has continued showery ever fince; and now rains very hard !

But, thanks to the barometer, on which chiefly I refted my judgement, and which is now below par ! the wheat is in the barn, and the barley still standing.

August 31. A valley, with a river in it, appears to have an influence on *flowers*. It is a common observation in this country, that the TRENT draws away fhowers from this neighbourhood: and I have repeatedly obferved that the TAME feems to have a fimilar éffect.

SEPTEMBER I. REGISTER OF THE WEA-THER OF AUGUST. The last has been a rainy month; with only one interval of fair No thunder, except once, at the weather. beginning of the month. Hence, 'perhaps, the weather has been influenced chiefly by the weight and moisture of the atmosphere; and The

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N

The barometer and bygrometer have, of courfe, been truly prognostic: except in one instance, when a quantity of rain fell, without any other previous change in the atmosphere than a fensible chillines; which was sufficiently noticed by the thermometer; but which made a ftill greater impression on the senses.

This chillinefs and the rain were brought by a brifk north wind, after a fucceffion of fouthweft winds. The clouds of vapours were probably returning in a condenfed ftate, and finding our atmosphere in a ftate comparatively rarefied, only 1 ± 0 heavy, they of courfe fell: and this, notwithftanding the air near the earth was 5° dry.

Hence, when the barometer is about par, no dependance can be had on the weather; not only lightning, but the wind, is able to influence it; and, of courfe, every minute circumstance of the atmosphere should be attended to, with double diligence.

OCTOBER 1. The REGISTER OF THE WEA-THER OF SEPTEMBER. Another rainy month ! with, however, feveral fhort intervals of fair weather. With frequent fogs; and fome thunder 14. MIDLAND COUNTIES.

thunder and lightning, which always brought rain.

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The barometer, about, or below, par; until the wane of the month, when it role from $3\frac{1}{2}^{\circ}$ light to $3\frac{1}{2}^{\circ}$ heavy in forty-eight hours! a most extraordinary rife. The confequence of which was, after a deluge of rain, three or four fair days.

The bygrometer, above par, the whole month; notwithftanding the wetnefs of the weather ! a most interesting circumstance.

The wind, wavering : principally fouth or fouthweft ; frequently farong. Shifting round to the northeast, brought a fall of rain.

Appearances. Small livid underfailing clouds were pretty certain forerunners of heavy Ihowers. The fetting fun (when obferved) generally foul.

GENERAL OBSERVATIONS. On the whole of this fummer's experience, I have been lefs certain than on that of the laft : owing principally to the barometer refting about par; the atmosphere remaining in equilibrium; fusceptible of the flightest alteration of moifture, wind, lightning, or other impulse.

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Confidering,

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Confidering, however, this circumftance, as well as that of my feldom having an opportunity of feeing the weftern horizon, during the fetting of the fun; and with thefe, the extreme wetnefs of the corn harveft; it is not, perhaps, lefs remarkable that I should have been *caught*, only once, this fummer, than that last fummer I should escape without an accident.

At prefent, I am clearly of opinion, that, by attending to the BAROMETER and the SETTING SUN, only, the weather may beforetold, frequently for three or four days, generally for twenty-four hours (a length of time effentially ferviceable to a farmer) with a degree of certainty : provided the atmofphere be not, in the mean time, agitated by thunder and lightning; against which there appears to be, at prefent, no certain guard. They will fometimes forefhow themfelves for feveral hours, in the figure and colour of the clouds : but in general, perhaps, they are not there to be forefeen : and the grand defideratum now wanted is a prognostic of lightning, as well as a teft of the prefence of the electrical fluid, or the matter of lightning; as it is more than probable that this has its influence

fluence on the atmosphere; though it do not fhow itfelf in lightning, or still more forcibly declare itself in thunder.

But fuppoing that even thunder, the moft certain harbinger of rain, cannot be foreknown with any degree of certainty; this, confidering its comparative unfrequency. ought to be no difcouragement to the farmer.

The failor, though he cannot calculate the longitude, with certainty, is neverthelefs affiduous in making and registering his obfervations.

To pursue the comparison, a farmer without a barometer, in HAYTIME and HARVEST*. is a failor at fea without a quadrant. And, in

 N_3

From general observation, as well as from the incidents registered aforegoing, the weather appears to be influenced, in fome degree at leaft, by different caufes, in different feafons : and although it may not be wrong to observe these influences, in AUTUMN, WINTER, and SPRING; yet I am clearly of opinion, that the facts arifing from fuch observations, ought not, in drawing inferences, to be mixed with those collected in the sum-MER MONTHS. For other remarks on this fubject, fee EXP. and OBS. on AGR. and the WEATHER, p. 155,

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WEATHER.

14.

in the firstness of good management, it is not less requisite to the latter, in that fituation, to be attentive to his log-book, than for the former, in those seasons, to pay due attention to his register.

To the fludent, at leaft, a REGISTER is indifpenfibly requifite : it is not merely a flimulus to his attention, but, by preferving what no memory can retain, becomes an authentic document of fludy : a record of reference to a combination of facts : the pureft fountain from which to draw practical knowledge.

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GENERAL MANAGEMENT

OF

FARMS.

THE OBJECTS of the Midland hufbandry vary, in different quarters of the GENERAL DISTRICT, as has been already intimated, and as will more fully appear in the courfe of this volume.

In the DISTRICT of the STATION, the four grand objects are mixed in a fingular manner:

GRAIN of almost every species; BREEDING in all its branches; DAIRYING on a large fcale; and GRAZING, both cattle and fheep *.

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* And to thefe might be added a fifth, --- JOBBING; which is not here, as in other diffricts, confined to what might be called professional dealers, but enters, more or lefs, into the bufinefs of farmers ; as will appear in MIN. 107.

The OUTLINES of management confift in keeping the land in grafs and corn, alternately, under a fingular fyftem of practice; and in applying the grafs to the breeding of heifers for the dairy, to dairying, and to the grazing of barren and aged cows; with a mixture of ewes and lambs for the butcher : all together, a beautifully fimple fyftem of management; and, being profecuted on large farms, and by wealthy and fpirited farmers, becomes a fingularly interefting fubject of ftudy.

In giving a detail of the ARABLE MA-NAGEMENT, I shall attend folely to the IN-CLOSED TOWNSHIPS; which, whether the inclosures be new or of an older date, are cultivated under the same course of management *.

References

* The hufbandry of COMMON FIELDS is the fame in most parts of the island; as if a general order or arret had, at fome early period, gone forth for their regulation. In Yorkshire, in Glocestershire, and in the Midland Counties, one uniform practice prevails: uniform, I mean, in the outline: in the minutiæ differences are traceable; and as, in a few years, the common field husbandry of this island will probably be no more, I endeavoured to catch these minutial differences in the MIDLAND COUNTIES. See MIN. 98.

15.

REFERENCES to the MINUTES relating to the GENERAL MANAGEMENT OF FARMS.

For conversation and reflections on the arable management of this district, see MIN. 19.

For a caution to the occupiers of extraparochial farms, 33.

For general reflections on the *bufinefs* of farming, 67.

For an inftance of impolitic management in an outgoing tenant, 76.

For obf. on *neatnefs* and *minutial* manager ment, 78.

For an inftance of the use of *experiments* to farmers, 89.

For reflections on jobbing, 107.

For an inftance of the folly of *fpeculating* in hufbandry, 114.

COURSE

16.

COURSE OF HUSBANDRY.

NO circumstance belonging to the provincial practice of this kingdom has been, to me, a matter of more furprize, than the succession of crops, in the prevailing practice of this district.

The GENERAL PRINCIPLE of management is that upon which every middlefoiled district ought to form its practice: namely, that of CHANGING THE PRODUCE, from grafs to arable crops, and from grain to herbage.

But whether the MINUTIÆ of practice, eftablished in the district under furvey, be eligible in every other middlesoiled district, I mean not here to fay. I will endeavour to give a faithful register of the practice, and leave the reader to adopt the whole, or such part of it as may be found eligible in his own situation.

In

16. MIDLAND COUNTIES.

In the prevailing practice of the diffrict ; a practice whole origin I have not been able to trace, having been prevalent in the inclosed townships, I understand, time immemorial ;—the course of management is this :

The land having lain fix or feven years in a ftate of swARD,—provincially "TURF,"—it is broken up, by a fingle plowing, for OATS; the oat ftubble plowed two or three times for wHEAT; and the wheat ftubble winterfallowed, for BARLEY and GRASS SEEDS;—letting the land lie, during another period of fix or feven years, in HERBAGE; and then, again, breaking it up, for the fame fingular succession of ARABLE CROPS.

There are men, however, who object to this practice, arguing that the foil cannot be kept fufficiently clean under this courfe of management; and on the lighter lands, on the foreft fide of the diftrict, it is become prevalent to clean the foil, for barley and grafs feeds, by a TURNEP FALLOW: a practice which has fpread itfelf, more or lefs, over the whole diftrict. But the turnep crop, as will be fhewn under the head TURNEPS, is lofing ground, on the ftronger foils; on which, nine

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186 COURSE OF HUSBANDRY. 16,

nine acres of ten are kept as regularly under the course of

> Turf, Oats, Wheat, Barley, Turf,

as the lands of Norfolk are under the Norfolk fystem of management.

For reflections on this extraordinary courfe, fee MIN. 19,

17.

SOIL and its MANAGEMENT,

THE SPECIES OF SOILS have already been mentioned, in defcribing the diftrict at large; the prevailing fpecies being a DEEP SANDY LOAM; varying, however, in ftrength and productivenefs: but, taken throughout, few diftricts can equal the diftrict of the prefent ftation, in uniformity of foil; the variations in productivenefs being frequently occafioned by

The

The SUBSOIL, which, though likewife remarkably uniform, is not altogether fo. Beds of *fand*, and thin feams of *gravel*, are found in different parts of it; and a *red clay*,—provincially "marl,"—in others; but the prevailing fubfoil is a *fandy loam* or brick earth; varying, like the foil, fomewhat in ftrength.

This variation of fubfoil is a natural caufe of variation in the productiveness of the foil: water, imbibed by the absorbent strata, and checked in its course by the retentive, is pent up, and forced toward the surface; rendering the foil cold and ungenial.

Nevertheles, UNDERDRAINING found its vay, late, into this district. Its first appearance in it was upon *this* estate, about thirty years ago; when some men from the Morelands of Staffordshire, into which it is probable the art had travelled out of Lancashire, brought it into this country.

Its establishment here, was probably owing to a mere circumstance. A farmer in the neighbourhood, struck with this novel practice, prevailed upon one of his labourers, who was a clever fellow at a "dyche," to go and see these "foreigners" at work. He went, went, caught their art and their tools in his eye; brought them both away with him; got tools made; commenced "lougher;" and ftill remains the most experienced of the district: though, from him, feveral others have taken up, and long followed, the bufines; fo that, in the course of a few years, most of the principal farms have been "gone over :" that is, have received the benefits of this cardinal improvement.

Thus genius and judgement, when happily joined, are valuable, even in a ditch. OLD SAMUEL, who is furnamed CLEVERDYCHE, and from whom I have these particulars, is, in truth, a genius of the first cast. See MIN. 106.

It is observable, however, that previous to the introduction of the present art, a species of underdraining had been practifed in this district, with THREE ALBER POLES; which have frequently been found, not by old Samuelonly, but by other experienced soughers, buried in very wet boggy patches, one upon two, in the triangular manner; forming a kind of pipe in the center.

But it does not appear, by the fituations in which these poles are found, that the modern

art of "killing fprings," as it is termed, was known to the ancient foughers.

The MATERIAL of foughing made use of by the Morelanders was wood: and old Samuel continued to drain with this material for many years. But finding, that, in the course of twelve or fourteen years, the fprings broke out again, he has not, for many years, used wood; except in very difficult cases; and then not alone. He reckons twelve or fourteen years to be the longest duration of wood drains; let them be ever fo well made.

The uses of wood were, therefore, fuperfeded by *flone*; pebbles—provincially "bowlders,"—picked off the arable land; the only flone the country affords; and better flones for the purpose need not be had. With these flones, the principal part of the effective drains now in the country have been done. The method of forming these drains will appear in MIN. 106.

Sod or "turf" drains have likewife been introduced into this diffrict; but thro' a different channel; and in a manner which ought not to be paffed unnoticed; as it flews what may be expected from the experience and

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and example of the superior class of profesfional husbandmen, affisted by the spirited encouragement of landed gentlemen.

Some twenty years ago, Mr. William More of Thorpe, in this neighbourhood, having observed, in a distant district, this method of draining, mentioned it to his landlord, the late Mr. INGE of Litchfield (whole character, as a landlord, and as a magistrate, was an ornament to his country), and intimated his defire to make a trial of it. The reply was,-"" Send for a man, and I will fet him to work; and if you think it will answer, you may then employ him; if not, I will allow you his expences." A man was fent for, and the foil being found proper for this mode of draining. he was employed fome length of time; the tenant paying his wages; the landlord, the expences of his journey.

From Thorpe this method of underdraining travelled into Leicestershire; where Mr. PAGET, a superior manager of the highest class of yeomanry, made himself master of the art, taught it to his labourers, practifed it on an extensive scale upon his own estate, and has sent young men, of his instructing, into various districts as sod-drainers: even this neigh-

i7. MIDLAND COUNTIES.

neighbourhood has, now, its fod-draining done by men from that quarter.

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How fortunate for rural affairs, when genius' becomes affifted by fcience and felf-practice! What may not be expected from professional men of this defcription !

The outline of the method of forming foddrains, here, is this: The upper part of the trench is opened with a common fpade, nine to twelve inches wide at the bottom, and to a depth fuitable to the given fituation; leaving it with a fmooth, even bottom: in the middle of which a narrow channel is funk with a draining tool*, and cleared with a fcoop, to a depth proportioned to the firmnefs of the fubftratum, in which it is made; leaving a fair even "fhoulder" on either fide; on which fhoulders the firft fpit or fod is laid, with the grafsfide downward, and, being trod down firm and clofe, the trench is filled up with the excavated mould,

If the fubfoil be too tender to bear the fod, or of too loofe and crumbly a texture to ftand firmly without "f running in," the wide trench is funk down to the required depth, and fhoulders formed with fods, cut fquare, and fet firmly

* See Norp. Econ. MIN. 2.

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firmly on each fide of the bottom of the trench; leaving a channel three or four inches wide between them; and laying the inverted fod upon these artificial shoulders.

The expence, in either cafe, about a penny a yard; which, being the whole expence, is very low.

Neverthelefs, the *duration* of fod-drains, if the fubftrata be fufficiently firm, appears to be much longer than those of wood, and, perhaps, equal, in fome fituations, to those of ftone.

Mr. More flowed me fome, which had been made upwards of twenty years, and which appeared to be quite perfect, acting, in wet weather, as well now as they did the first year. On cutting through fome of these old drains, and examining them carefully, he found the fod had united intimately with the mould of the fubfoil, into one firm mass; forming a regular arch; the pipe, fo far from being warped up er even fouled, was wider than when it was made. Polecats and other vermin burrow in these drains :- this, reason fuggefts, would, in making their inner chambers, be liable to close the pipe. Moles are, in theory, still more formidable enemies. But reason and theory cannot set aside facts.

Mr,

MIDLAND COUNTIES. 17. 195

Mr. Paget, likewife, having occasion to make fome additional drains in a ground which had been fod-drained, fome ten ortwelve years, found, in cutting across the okl drains, that they were in a ftate of high prefervation.

*FALLOWING. The prevailing fallow of this district is the pin-fallow, for barley (fee the article BARLED; ; the fummer fallow is rarely attempted; and the turnep fallow, as has been intimated, is confined, at prefent, to the practice of a few individuals.

If fallowing can be difpenfed with in any cafe, it may be under the management of this district, where only three arable crops are taken before the land be laid down again to grafs. But even under this management, much of the land is foul and unproductive, through the want of being fallowed.

And it is a fact, which ought not to be concealed, that one of the first managers in the diffrict is averfe to the pin-fallow practice. His argument is ftrong. " See what a piece of feeds (raygrafs and the clovers) after a turnep fallow will do. It will require a cow and perhaps, five or fix fheep an acre to keep it down; efpecially in the fpring when grafs is

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is valuable. But look into a piece of ten or twelve acres of turf, after PINFALLOW, and you won't fee, perhaps, more than five or fix cows and a few straggling sheep in it : with fome parts eaten as bare as a common, and others fcarcely touched."

For an inftance of practice in *fummer fal*lowing, fee MIN. 18.

For a proposed improvement of the pinfallow, see MIN. 19.

For the origin and caufe of high ridges, fee MIN. 21.

For an inftance of practice in *furface drain*ing, 32:

For instance of practice in the reclaiming of pit places, 35.

For inftance of practice in underdraining, fee 106.

For inftance of the efficacy of fod drains; fee 109,

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18.

MANURĖS

AND THEIR

MANAGEMENT.

THE SPECIES OF MANURE made use of, here, are dung, lime, and what is called "MARL "."

Dung is become, in this neighbourhood, an extravagant species of manure. I have found it nowhere elfe so highly valued. Half a guinea a load is not an uncommon price. The load, however, is large : that of a waggon, with five horses. Nevertheles, the price O 2 is

* The CORES OF HORNS, crushed in a mill, have been used in this district; but with what success I have not learnt. As an animal production, there can be little doubt of their efficacy : the only objection to them lies in the difficulty of reducing them. MANURES.

is a ftrong evidence of the ftrength and spirit of the farmers of this district. The gardens of Tamworth * may, however, be, in some measure, the cause of this extreme dearners.

In the MANAGEMENT OF DUNG, one circumstance, chiefly, requires to be particularized : the method of *fpreading* is on the land.

In the ordinary practice of the kingdom, dung is fet upon the land in hillocks, and fpread, afterward, by a man ftanding on the ground. But, here, the prevailing cuftom is to fpread it out of the carriage, as it is brought into the field; by a man or men, ftanding on the carriage.

For the minutiæ of this practice, see MIN.12.

For farther observations on it, see MIN. 18. LIME is, here, in high estimation, among farmers in general; though some few individuals object to it.

In the ordinary practice of the diffrict, a fallow is feldom made without being dreffed ? with lime; under an idea that it " mellows" the foil and makes it " work well," while in tillage; and " fweetens," improves the qualityof the herbage, when laid down to grafs.

Infor-

* See page 17.

18: MIDLAND COUNTIES.

Unfortunately, however, for the diftrict of the flation, no calcarious fubftance has yet been difcovered within it, to fupply it with lime, in quantity as a manure *: for which purpose it is fetched, into *this* neighbourhood, eighteen or twenty miles.

There are two *fpecies of lime* in ufe: the one burnt from a ftone of fingular hardnefs, the other from more common limeftones: the firft is of fingular ftrength as a manure; the latter of a more common quality. The one, I believe, is peculiar to fome hillocks in Derbyfhire, on the northern fkirts of the Charnwood hills; the other is common to that quarter and to the weft of Staffordfhire: the former is called *Breedon* lime, the latter *Ticknall* or *Walfal* lime, from the names of the places in or near which they are principally burnt.

The nature of the BREEDON LIME is a fit fubject of enquiry.

A general description of it will appear in MIN. 2. and an experiment made with it, in MIN. 100. All that remains to be given in O 4 this

• Limeftone is found on both fides of the Anker, in the neighbourhood of Tamworth; and by a proper fearch, might perhaps be found in fufficient quantity to be profitably burnt into lime.

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18.

this place, is a minutial description, and the analysis, of the stone.

The prevailing species, of which the lime may be faid to be made, is of this description: The colour, of the furface formed by the natural feams or fiffures, is a red or strong fleshcolour; of that of old fragments, a lighter fleshcolour; of freshbroken fragments, a lighter blush. The contexture uniform; breaking with rough surfaces; extremely hard, and close, resisting acids in an extraordinary manner; the muriatic acid standing some time on its surface, before it take effect ! and, when pounded, dissolves showly and quietly. Nevertheles, under the hammer it flies as the St. Vincent store. See GLO. ECON.*

One hundred grains contain only three grains of indificiuble matter,—a red brickdutlike powder, with a few ruftlike fragments. Neverthelefs, the tincture of galls produces no effect on the folution; nor does the fmell, in diffolving, detect any thing of a chalybeate

• It is a noticeable circumstance, however, that notwithstanding the refemblance between these two fossils, the LIME from one is white as snow, from the other (now under notice) the colour of wood after ! and this notwithstanding the reducis of the stone.

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chalybeate quality : an alkaline folution throwing down a pure white calcarious matter,

Another specimen of a still higher reddirect rust colour-and which is suspected to be a species of iron stone, proves, under analysis, to be of the same quality as the main rock; except that it contains a greater proportion of indiffoluble fragments.

Hence, it is more than probable, the idea, that Breedon lime contains fomething of an iron quality, is void of foundation: an idea, however, which deters fome fenfible men from using it.

The MANAGEMENT OF LIME, in this diffrict, is entitled to fingular praife. In the common practice of the diffrict, the load heaps are generally *watered*, as they are thrown down from the waggon; and always *turned over*, to complete the falling more effectually. See YORK. ECON. vol. i. p. 350.

For an inftance of this practice, fee MIN. 3. Another economical practice, in the management of lime, is equally entitled to notice. If a quantity of lime be fetched in autumn or the early part of winter, to be used in the fpring, when team labour is more valuable, it is thrown up into a regular rooflike heap

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MANURES.

heap or mound, and *thatcht* as a ftack ! a fmall trench being cut round the fkints to catch, with an outlet to convey away, rain water. By this admirable precaution the furface of the heap, perhaps to a confiderable depth, is prevented from being run to a mortarlike confiftence by the fnows and rains of winter, and thereby rendered in a manner ufelefs as manure. See YORK. ECON. v.i. p. 349.

MARL. The red earth which has been fet upon the lands of this diftrict in great abundance, as "*marl*,"—is much of it in a manner defititute of calcarious matter; and, of course, cannot, with propriety, be classed among MARLS.

Nevertheles, a red fossil is found, in some parts of the district, which contains a proportion of calcarious matter.

The marl of CROXALL (in part, of a ftonelike or flatey contexture, and of a light red colour) is the richeft in calcariofity: one hundred grains of it affording *thirty* grains of calcarious matter; and feventy grains of fine impalpable *redbarklike* powder*. And

• This marl is fingularly tenacious of its calcarious matter; diffolving remarkably flowly. One hundred grains,

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And a marl of ELFORD (in colour and contexture various, but refembling those of the CROXALL marl) affords near *twenty grains*:

Yet the marl of BARTON—on the oppofite fide of the Trent—though fomewhat of a fimilar contexture, but of a darker more dufky colour—is in a manner deftitute of calcariofity ! one hundred grains of it yielding little more than one grain—not two grains of calcarious matter. Neverthelefs the pit, from which I took the fpecimen under analyfis, is an immenfe excavation, from which many thoufand loads have been taken.

And the marls of THIS NEIGHBOURHOOD (which moftly differ in appearance from those described, having generally that of a bloodred clay, interlayered, and sometimes intermingled, with a white gritty substance) are equally poor in calcariosity.

one is and it may be, that the good click

grains, roughly pounded, was twentyfour hours in diffolving; and another hundred, though pulverized to mere duft, continued to effervefce twelve hours; notwithftanding it was first faturated with water, and afterward shook repeatedly. The Breedon stone, roughly pounded, disfolved in half the time; notwithstanding its extreme hardness.

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One hundred grains of the marl of STAT-FOLD--(which I believe may be taken as a fair specimen of the red elays of this quarter of the district) afford little more than two grains of calcarious matter *. Yet this is faid to be "famous marl;" and, from the pits which now appear, has been laid on in great abundance.

I do not mean to intimate that these clays are altogether destitute of fertilizing properties, on their first application. It is not likely that the large pits which abound, in almost every part of the district, and which must have been formed at a very great expence, should have been dug, without their contents being productive of some evidently, or at least apparently, good effect, on the lands on which they have been spread.

I confeis, however, that this is but conjecture; and it may be, that the good effect of the marls, first described, being experienced, the *fashion* was set; and, the diftinguishing quality being unknown, or not attended

• Lodged, not in the substance of the clay; but in its natural cracks or fissures.

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tended to, matls and clays were indiferiminately used.

The most interesting fact that can be brought home, respecting these clay pits is, that they were made, chiefly, by the last generation; and that the present generation are experiencing, or believing that they experience, an evil effect arising from their produce: the fertilizing quality of which (if it ever existed) being now spent, the dead clay remains a clog to the native foil; rendering it tenacious, and difficult to work.

This is at leaft the opinion of intelligent professional men; and the idea, I believe, is founded in fact. LIME is found to do away this evil effect; and this may account for the spirit of liming in the present generation.

On the fouthern banks of the Anker, is found a GREY MARL; refembling, in general appearance, the marl of Norfolk, or rather the fullersearth of Surrey. In contexture, it is loofe and friable.

This earth is fingularly prodigal of its calcariofity. The acid being dropped on its furface, it flies into bubbles as the Norfolk marl. This circumstance added to that of a ftriking

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striking improvement which I was shown as being effected by this earth (see MIN. 89.) I was led to imagine that it was of a quality fimilar to the marls of Norfolk.

But, from the refults of two experimentsone of them made with granules formed by the weather, and collected on the fite of improvement, the other with a fpecimen taken from the pit—it appears that one hundred grains of this earth contain no more than fix grains of calcarious matter ! the refiduum a creamcoloured faponaceous clay, with a fmall proportion of coarfe fand.

Hence it is evident, that the acid applied fuperficially, as a TEST, is no guide whatever to the intrinsic quality of calcarious substances. The marl of Hall End appears, by the acid of sea falt, used as a TEST, to be of tenfold strength to that of Croxall; but, by the same acid, used as a menstruum, the latter proves to be of sivetimes the strength of the former: while the Breedon stone, which appears to be noncalcarious to the acid, as a TEST, proves, on ANALYSIS, to be almost purely calcarious *.

* This by way of caution to thole who may have occasion to learch for calcarious substances. The Breedon

For

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For an account of the Breedon lime, see MIN. 2.

For an inftance of practice in the management of lime, 3.

For the method of *fpreading dung* out of carts, 12.

For an *experiment* with *dung* on fallow for barley, 18.

For observations on *fpreading dung* out of carts, 18.

For an incident of *plowing in turneps* as a manure, 34.

For an inftance of *dung* being *too dry* to digeft, 45.

For an inftance of watering a dung heap, 47. For practice and price, of mixing manures, &c. 50.

For reflections on growing aquatic manure, 52. For another inflance of watering dung, 57. For an inflance of collecting compost, 86.

For an account of the *marl* of North Warwickshire, 89.

For

Breedon from by merely touching its natural furface, in the ufual way, with the acid, might be passed as noncalcarious. It is observable, however, that if the furface be scraped, so as to loosen some of the particles into a powder, it instantly yields to the acid. 208

For inftance of growing turneps on a foil beap, 95.

For experiment with lime for barley, 100.

For further observations on Breedon lime, 103.

For inftance of lime used as a topdreffing, 108.

For the effect of aquatic manure on turneps, fee MIN, 111.

19.

SEMINATION.

IN THE SEED PROCESS of this diffrict, though there is nothing particularly cenfurable, there is little to praife. Broadcaft may be faid to be the univerfal mode of sowing: though, of late years, drilling, a procefs new to this quarter of the kingdom, has been tried by a few individuals. With refpect to PLANTING or SETTING, by hand, I met with only one inftance, and that with beans.

In finally ADJUSTING the furface after fowing, the Midland farmers are entitled to comcommendation. Barley lands are clotted, with clotting beetles; which, on ftrong land, are perhaps much preferable to a roller: and oatlands " turfed :" — that is, the fods torn off the plits by the harrows, and lying on the furface, probably with their grafs fides upward, and of courfe in a ftate of vegetation, are thrown; by hand, or with forks, into hollows, with the grafs fide inverted : thus cending to neatnefs, cleannefs; and the relief of the infant crop; while the expence is inconfiderable *.

For a convenient method of *preparing the Jurface* of a whole-furrow feed-plowing, fee MIN. 20.

For an instance of mice hoarding the feed, 26. For an evidence of the propriety of foring the whole furrow the day it is plowed, 40.

For observations on forwing by the trees, 82.

For further observations on the *fame* subject, 90.

For opinions on the change of feed, 91.

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P

CORN

• By observation, in my own practice, eleven acres took ten womens' daysworks, or about sixpence an acre. 20.

CORN WEEDS.

THE VEGETATING PROCESS of the MIDLAND DISTRICT confifts, merely, in HANDWEEDING; the use of the HOE being in a manner unknown to farm labourers, and never attempted by their wives or children (fee GLO. ECON.). Turneps are the only crop which is hoed; and this is generally done by gardeners; or by men who make a trade and mystery of it. See the art TURNEPS.

The ARABLE WEEDS most noxious, in this diffrict, are the following. They are divifible into three classes, agreeably to the states of aration, in which they are, respectively, most conspicuous; as those of

Fallow, Corn, New ley-

FALLOW WEEDS.

Provincial. Linnean. English.

Twitch,—triticum repens,—couchgrafs. Black twitch,—festuca duriuscula,—hard fescue.

Running

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Provincial. Linnean. English.

Running twitch,—agrofis alba,—creeping bentgrafs.

Common thiftle, -- ferratula arvensis, -- common thiftle.

Boar thiftle, — carduus lanceolatus, — spear thiftle.

Docks-rumex crifpus *,-curled dock.

CORN WEEDS.

Rough cadlock, -finapis arvenfis +, -wild muftard.

Smooth cadlock, — brafica napus, — wild rape. Fathen, or wild fpinage, — chenopodium viride, redjointed goolefoot.

Dea nettle, or wild hemp, -galeopfis tetrait, wild hemp.

P 2

carduus

* In this country, an inflance of practice occurred to me, which is well entitled to a place in this register: that of employing a woman to follow the plow, especially in FALLOWING, to pick up the root weeds exposed in the furrow; more particularly the DOCK. When root weeds are abundant, the practice is evidently eligible: the expence is no object, and the benefit, in fome cafes, may be almost invaluable. MAJOR BowLES of Elmhurst, near Litchfield, is entitled to the honor of this *thought*.

+ With a few plants of the WILD RADISH, rapbanum raphanifirum. CORN WEEDS.

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Provincial. Linnean. Englifb. earduns lanceolatus, - spear thiftle. ferratula arvensis, -- common thistle. carduns palustris, -- marsh thistle. rumex erispus, -- curled dock.

ed camomile.

Sow thiftle, ---- fonchas oleraceus, ---- common fowthiftle.

Hard iron, —ranunculus arvenfis, —corn crowfoot-

buckweed.

Corn mint, -- mentha arvensis, -- corn mine. carduns crifpus, -- corled thildle:

Tare,-ervum birfutam,-twofseded tare.

Hairof, -galium aparine, -cleavers.

Willow weed, — polygonum pennfyluanieum, — pale perficaria.

Goole tankey, --- potentilla anferina, --- filverweed.

> 11 filago farfara, --- coltstoot. Neufes

Provincial. Linnean. English. Neutles, — nrtica dioica, — common nettle. Poppy, — papaver dubium, — longfmoothheaded poppy.

Golds,—cbryfanth. fegetum,—corn marigold. Cockle,—agroftemma githago,—cockle. Mellilot,—irifolium mellilotus,—mellilot. Groundfil,—fenecio vulgaris,—groundfil. thlafpi burfa paft.—fhepherdspurfe. Begars needle,—fcandix petteu-veueris, fhepherds needle. Chicken weed,—alfine media,—chick weed. eupbrafia odontites,—red eyebright. thlafpi arvenfis, common mithridate.

fcabiosa arvensis *,--corn scabious.

CLOVER WEEDS.

filago germanica, common eudweed. cerastium vulgatum, common moule-ear.

P 3

geranium.

• This inveterate enemy of arable crops (fee YONK. ECON.) is not common to the diffrict. SUTFON AN-BRON, the bloody feene on which the brunt of the battle of BOSWORTH FIELD was probably fought, is the only fpot on which I have found it; and there it is fingularly prevalent. The wheat crop, in 1785, was in a manner deftroyed by this wesd, encouraged in its mifchiefs by the drynefs of the feafon.

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Provincial. Linnean. Englifh. geranium diffectum, jagged cranesbill. carduus lanceolatus,—fpear thiftle. rumex crifpus,—curled dock. fonchus oleraceus,—common fowthiftle.

serratula arvenfis*, --eommonthistle.

For an inftance of the mifchievoulnels of "black twitch," fee MIN. 59.

For observations on the couchy foftgrafs, 73.

For an inftance of the shameful predominancy of *thifles* and *docks*, 76.

For an inftance of weeding a wheat fubble, 77.

HAR-

* I met with an inftance in this diffrict, and in the practice of the first manager in it, of the COMMON CORN THISTLE being drawn out of new leys, with a docking iron, fuch as docks are usually drawn with; and although this operation is not found to be a radical cure, the first drawing, yet it weakens the roots very much; and, by continuing the practice a few years, is faid to extirpate the plants. This I mention by way of hint to those who wish to ascertain, on their own particular foils and fituations, the most eligible way of overcoming this most formidable enemy. · 21.

HARVESTING.

THE CORN HARV EST of this diffrict, though it cannot be called, emphatically, a corn country, is not got in without fome foreign affiftance from whom are termed "peakrils" and "low country men:"—namely, men, and fome women, from the Peak of Derbyfhire, and the Morelands of Staffordshire. The wheat is much of it cut by these itinerants.

The HARVEST LABOURERS, of the diftrict, are not hired for the barvest month, as in Surrey, &c.; nor for the barvest, be it short or long, as in Norfolk; but work by the day, as at other seafons of the year; and for the fame wages, a shilling a day; but with the addition of full board, so long as the harvest lasts: and, in addition to this, each labourer who has been constantly employed through the summer, has a right, by custom, to the carriage of a load of coals, in autumn. It is P 4 also 216

alfo a pretty common cultom for farmers to let their conftant labourers have their bread corn fomewhat below the market price; more effectially when corn is dear.

The bours of work, too, like the wages, are the fame in harvest as in lefs busy feasons; and the fame flow pace is too generally obferved. No coming at four in the morning; no trotting with empty waggons; nor any personal exertion, whatever, betokening harvest; faving such as are stimulated with ale as strong as brandy!

The method of harvefting SHEAF CORN, whether wheat or oats, is, in this diffrict, above par. In part it is new to me: REAF-ING being generally done by the " threave;" —feldom by the acre.

Athreave is twenty four fheaves; each fheaf meafuring a yard round, in the banding place; the ftring croffing the band in meafuring. A better fized fheaf, for feafons and crops in general, could not, perbaps, well be fixed upon (fee GLO. ECON. art. WHEAT.)

The great difficulty, in reaping by the threave, lies in not being able to get the fheaves made up to the flandard. The deviation,

85-

viation, however, is on the night fide : whereas, in reaping by the acre, it will always be on the wrong. For, in that cafe, it is the interest of the reapers to make large theaves : having thereby fewer bands and lefs binding. On the contrary, in reaping by the threave, it is their interest to make finall theaves.

Another conveniency arifes from resping by the threave : any number of hands may be fcattered over a piece of corn, as circumftances may require, without the extraordinary trouble of measuring the land in this case. Each man sticks to his "throo," whether it consists of one or more lands, and sets up his own sheaves in one row of shucks, of twelve sheaves each : so that the trouble of ascertaining the number of threaves is inconsiderable.

The price, for wheat, is fourpence a threave, with beer; provided the crop be tolerably good: if very thin, fivepence or fixpence is fometimes given: or fuch thin wheat is fometimes reaped by the acre; at about fix or feven fhillings an acre. For easts, threepence is the common price.

ła

In CARRYING sheaf corn, there is usually a loader to each pitcher. The buts are laid outward all round, as in Surrey and Norfolk; forming the load, not into a long square, but into a figure between that and an oval; binding it across and across, in three or four places.

The method of harvesting LOOSE CORN, whether oats or barley, is reduced, here, to the lowest degree of simplicity.

In Yorkshire, barley and oats are mown inward, against the standing corn, and harvested in sheaf.

In Kent and Surrey, they are mown outward, with a cradle, laying them fo ftraight and neatly, they might be bound after the fithe; but are harvefted loofe. In cocking them, the Kentish farmers make use of corn forks; laying the ears all one way; preferving the fame neatness and regularity, even to the flack; the outfide course of which is laid with unbroken pitches, with the buts outward, having thereby a security nearly equal to that of sheaf corn.

In Norfolk, they are mown outward, with bows, fixed to the heels of the fithes; which,

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which, however, do not lay them fo neatly as cradles; but still the heads, if the crop stand anyway fair, lie one way, and the tails the other. There, too, the *corn fork* is used.

Here, they are mown outward with naked fitbes! and cocked, or rather rolled into rough bundles, with common bay forks! and this, generally, two or three days before they be carried!! a crop of clover, a crop of barley, a crop of peas, a crop of oats, and a crop of beans and vetches, being harvested very much in the fame manner.

Mowing barley and oats with naked fithes, and pulling them about with hay forks, have, to ftrangers, a flovenly and wafteful appearance. But with refpect to cocking loofe corn before the day of carrying, fomething, perhaps, may be offered in its favour.

It is true, that, in other districts, it is confidered as very bad management to leave even a few cocks remaining only one night; under an idea that, if loose corn once get wet in cock, it is difficult to get it dry again, without a great waste of labour and corn. Nevertheles, experience shows that even a very heavy shower has not that evil effect in the practice of this country.

An

21)

An incident in my own experience convinced me of the fact: I had, through neglect, a few oats in cock left out all night. Next day, much rain fell; but the fucceeding day proving fine, they were got into very good order again, in this manner. The tops were first dried, by raising them up, light and porous, with the times of a fork; fo as to let the fun and air into them; and, when the tops were dry, the bundles were turned over, to air the bottoms.

In this manner, and without greater trouble, corn cocks are generally dried; though fometimes it will happen that they require to be pulled to pieces: in which cafe, there is, of courfe, confiderable wafte.

The Midland farmers have one very good plea for harvefting oats in this manner. For, by cocking them a few days before carrying, the labour and wafte of turning is faved : befides, by being cocked while a portion of the fap remains in them, they are not fo liable to be fhed in cocking, as when they are diffurbed in a dry parched ftate.

This practice, probably, took its rife in open common fields. Formerly, much of the district

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diffrict lay in that flate; the foil being raifed into high rooflike ridges. The furrows and fkirtsofthe lands lay, of courfe, proportionably low; and the combeing thereby frequently deprived of the benefit of the fun and wind, it was found, by experience, most eligible to gather the corn into heaps, and place them upon the tops of the ridges. And this is the prefent practice of "field farmers." In a few days after cutting, the whole crop may be feen ftanding in pitchcocks, placed in close order, like strings of beads stretched along the ridges.

But notwithstanding this practice may be eligible where corn is mown with the naked fithe, and rolled up into rough porous bundles, it does not follow that it should be univerfally adopted. Were a Kentishman to leave his unruffled close piles exposed even to one freavy shower, he would find fome difficulty to get them thoroughly dry again, without spreading them abroad.

An evil attendant of the Midland method of harvefting loofe corn is, the increase of bulk which corn harvested in this way acquires, comparatively with the same quantity of of corn harvested in the Kentish manner. More barnroom is of course wanted, and a greater number of loads are to be carried. Four loads an acre is no uncommon crop i five loads are talked of, and are fometimes carried. But the method of *loading*, and that of *barning*, both of them tend to increase this evil.

The method of CARRYING loofe corn, here, differs from that of other diffricts, in having only one loader to two pitchers; and in loading, not with the arms, but with a fork; the loader standing in the centre of the load, and piling the corn loofe and light around him. Thus the entire process tends to encrease the number of loads.

And the method of HOUSING is not calculated to do away the inconveniency. I never met with an inftance, in this diffrict, of a *horfe*, or any other *animal*, being ufed on a mow.

RICKING, however, remedies the evil; and in this district, where barnroom is more contracted than in fome other, loofe corn is pretty generally put into ricks.

In the method of ricking loofe corn, nothing is noticeable; excepting the last finish. To endeavour

21.

endeavour to fecure the ftems from the pillaging of fparrows, and other fmall birds, they are, generally, either "tucked" or "pared :" that is, either the loofe ears, expofed on the outfide, as many unavoidably are, in the method of harvefting above defcribed, are doubled back, and thruft into the ftem; or the entire ftem is fhaved with a fithe laid longway in the handle, or fome other fimilar inftrument : in fome few inftances I have feen the ftems thatched, as the goofs.

On ricking fheaf corn a few particulars may be mentioned. Though built on a fquare frame, the ftem—provincially the "wall," is not carried up fquare, as in Surrey and Norfolk; nor round, as in Gloceftershire; but in a form between the two; the corflers of ricks being rounded off, as those of loads.

Large ricks being fashionable, and it being customary, in carrying up the stems, to bind with the ears, instead of the buts of the steady of the buts of the staught the Midland rickers an admirable: expedient, when any fymptom of stipping, in carrying up the stem, is perceived, to prevent vent file milchief; namely, that of laying long grow longbs across the part affected : an excellent thought.

In fetting on the roof of a fheaf corn rick; the Midland rickers are above par: laying the laft courie of the ftem for as to project a few inches; and form a kind of cornice for the eaves of the thatch to reft upon, and to carry the drip clear of the ftem. The middle is then filled in full and round; fo that the buts of the outfide theaves hang downward.

This, though not peculiar to the diffrict, is a rule which ought always to be observed, in forming a roof : for, in this case, if rain should happen to penetrate through the thatch, there is little fear of its doing, even the roof of the rick, much injury : every ftraw becoming a conductor to lead it to the furface.

Another commendable practice, in forming the roof of a fheaf corn rick, and which is new to me, is that of carrying it up without *pitching bok.* A man flicks his heels intothe roof, and flands with great eafe and fafery. This might well be copied by other diffricts: holes are dangerous; unlois great care be used used in making them up, and in thatching them securely. For if water enter, in this part, it finds its way directly into the heart of the rick.

The method of *fecuring corn ricks*, in a catching feafon, previous to their being thatched, is likewife entitled to notice. It is effected with "battins"—fmall truffes of ftraw—which are afterward ufed as thatch. A row being laid clofe, and pegged *fecurely* along the eaves, with their buts downward, others are laid (firmly but without pegs), as tiles or flates are laid on a roof, with their heads downward; fpreading the ears (without untying the bands) fo as to prevent the rain water from getting through between thofe which lie below: continuing, thus, till the ridge be reached.

Having plenty of these battins, in corn harvest, ready at hand, to cover a rick with, in catching weather, is a very great conveniency. A rick of "200 threave," eighteen or twenty loads, may be secured in a few hours; or, with plenty of hands, in half an hour.

The method of *thatching ricks* is also peculiar in this district, and requires to be men-Vol. I. Q tioned. tioned.' Instead of thrusting the ears of the straw into the roos, and spreading the buts outwardly as a fecurity; the straw, in thatching, is laid on as the battins, with the ears downward, and of course outward (excepting the first course at the eaves), and is fecured in its place, by pegs and hay ropes *; paffing horizontally from end to end of the roof; at the distance of twelve or fourteen inches from each other \pm .

For observations on *flucking* sheaf corn, 10. For remarks on *reaping* by the threave, 75. For reflections on *gleaning*, 80.

For further observations on shucking, 81.

FARM

* Sometimes thatch is board with szier twigs, which are much more lafting than hay bands (that are only onnuals), in a fimple ingenious manner. The final end is formed into an eye, like that of a with, and the thick end run into the roof, as a peg, thro' the eye of the fucceeding twig.

+ An inconveniency attends this method of thatching-A rick cannot be thatched, with propriety, until the roof has done fettling. For if it fettle after it is thatched, the firaw is raifed into puckers between the bands, and the water, of courfe, let in.

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22.

FARMYARD MANAGEMENT.

ON THE BARN MANAGEMENT of this district little requires to be faid. The fouthern method of thrashing, and the sail fan, are in universal practice. I have, however, met with some two or three machine fans; and thefe, in the practice of the very first managers of the diffrict : neverthelefs, even the fuperior class of farmers, in general, still remain in the old dufty path.

CHAFCUTTING, as it is pretty generally termed, but here provincially "frawcutting," -is in great use. Not, however, the ordinary practice of cutting hay and fraw into what is, in most places, called chaf or cutchaf, but, here, more properly "CUTMEAT;" but by reducing oats, in fraw, into this species of fodder; which is given, not to horfes only, but to cattle; especially fatting cattle. It

Q 2

It is thought to give, not only fatnefs, but a finenefs of fkin, to all forts of flock.

The CHAPBOX made use of, here, is of a peculiar construction. It unites, in some measure, the old single-hand machine, and the modern one with a wheel of blades. This, in use here, has a long upright knife; but seeds itself; by which means the cutter has both hands at liberty, for the knife. It is made at or near Birmingham, and fold at most of the market towns of the district. It is, however, somewhat complex; and fitter for a man who makes a business of "straw cutting," than for a farmer's fervant.

The price of cutting, three farthings z heaped bushel; but it is cut extraordinarily fine.

The STRAWYARD MANAGEMENT, here, falls between the northern and the fouthern practices: cows are pretty generally *boufed*, in the fheds that have been defcribed : but young flock ftill remain in open yards; and fome are kept out, in the field, a principal part of winter.

MARKETS.

23.

MARKETS.

THE PRINCIPAL MARKETS of the immediate DISTRICT of the STATION, are *Tamworth*, *Lichfield*, *Barton* (on Trent), *Afbby* (De la Zouch), *Atherston*, *Bof*worth.

The three first are good markets; the last is almost in difuse; though fituated in the center of a fertile district; a charming plot of country. But there is no manufactory, no navigation, nor any great road, within several miles of it; its own road very bad; with Ashby and Atherston on either side of it; and LEICESTER within reach.

But the metropolitan market of the diffrict is BIRMINGHAM, with the manufacturing towns of its neighbourhood. The produce of this diffrict, whether of live flock or Q 3 grain, grain, may be faid to center eventually in Birmingham; which bears a fimilar relation to the market-towns of the country round it, as London does to those in its neighbourhood *.

The more fouthern parts of LEICESTER-SHIRE and WARWICKSHIRE, NORTH-AMPTONSHIRE, &c. are influenced by the grand vortex. The fat cattle and fheep of these districts go chiefly to SMITH-FIELD,

It may be right in this place, to take notice of a dispute which arole, during my refidence in the district, between the townspeople of Tamworth and the hucksters of Birmingham: the dispute arising to little less than riot: the townspeople driving the hucksters out of the market,

4 This is an interefting fubject. Markets are, or ought to be adapted to the mutual benefit of the producers, and the confumers at large :

• Lately, a weekly market has been effablished at ROTHERHAM, in Yorkshire, to which fat flock is driven from the northern parts of LEICESTERSHIRE, &c. The buyers at this market are the butchers, not of the manufacturing towns of Yorkshire only, but of Lancashire. large: but more particularly to thole of the given town, and its neighbourhood. Mere market towns have no huckfters to fupply them. They depend entirely upon the marketday for their fupply: and if, in times of fcarcity, huckfters from large towns repair to a country market, they may, in a few minutes, clear the market; and leave the townfpeople defitute of a week's provifions.

On the other hand, if huckfters be wholly precluded from buying up even the furplus of a country market, the market itfelf, and of courfe the townspeople, eventually, will be injured. The producer will, of course, endeavour to find out a market, where he can fell his produce, on a certainty; without running the risque of having it to bring home, or of felling it at an under price to the monopolizers of the town. The market of course becomes badly served, and the ware, in consequence, inferior and dear.

The markets of Lichfield and Walfal (with many others in the kingdom) are therefore wifely regulated. They open at eleven o'clock; but no HUCKSTER is permitted to buy until Q 4 twelve: twelve: fo that the TOWNSPEOFLE have an hour to fupply their wants. By this judicious regulation the markets are, eventually, ferved; and this, without injuring the town, in the first instance, by rendering its inhabitants liable to circumstances,

For a description of Belton fair, 1. For a description of Fazeley fair, 13. For a description of Tamworth fair, 15. For remarks on the delivery of corn, 31. For a description of Ashby stallion show, 37.

74.

WHEAT,

THE SPECIES prevalent, here, is the "RED LAMMAS;" the ordinary red wheat of the kingdom,

Of late years, the "ESSEX DUN,"-fimilar to the Kentifs white cofh of NORFOLK, and the Hertfordshire brown of YORKSHIRE, -has been making its way into this diftrict.

Thofe

Those who have given it a fair trial, like it, on account of its giving a great produce: but the millers are not yet reconciled to it; though they give no sufficient reason for their diflike. But so it was in Norfolk, on its first introduction there: fee NORF. ECON. vol. 1. p. 202.

CONE WHEAT was formerly grown in this diftrict; but is, at prefent, out of use.

SPRING WHEAT (triticum aftivum) is here cultivated, and with fingular fuccefs; owing principally to the time of forwing: the wane of April !

This proves that it is a fpecies widely diftinct in its nature from the *winter* wheats.

In the practice of a fuperior manager * it was difcovered, that by fowing early, as the beginning of March, the grain was liable to be fhrivelled, and the ftraw to be blighted; while that fown, late, as the middle or latter end of April, or even the beginning of May, produced clean plump corn ! effects directly opposite to those of winter wheat.

However,

* Mr. PAGET of Ibflock,

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However, it appears to be at prefent (1789) growing into difrepute: the quality of the grain is found to be lefs valuable than that of Lammas wheat. Neverthelefs, in fome fituations, and under fome circumstances, I am clearly of opinion it may be highly eligible: more especially in a turnep country. It appears to me to be well entitled to the attention of the Norfolk farmers.

SUCCESSION. In the ordinary practice of the country, wheat fucceeds oats! Perhaps, nine tenths of the wheat grown in the diftrict is what is termed "brufh wheat :" is fown on oat flubble—provincially " oat brufh" with a finall proportion of " barley brufh." A fact which a ftranger riding through the diftrict, previous to harveft, and feeing the fine crops of wheat which it produces, would not readily credit.

I met with a few inftances of wheat being fown on *turf* of fix or feven years leying; and with feveral on *clover ley* once plowed : alfo fome of wheat after *turneps*. But the beft crops

* Weftward of the Tame-the foil a light fandy hoam, wit is the prevailing practice to fow wheat after turneps, fed off with fheep in autumn, crops which this, or almost any other district produces, are fown after *summerfallow*. The practice, however, is confined principally to one leading man; ---Mr. PRINCEP of Croxall.

Nevertheless, viewing the district generally, the universal matrix of wheat may be faid to be OAT STUBBLE; of which, only, I shall treat.

TILLAGE. The foil procefs varies in the practice of different individuals. Some plow once lengthway, as the old turf was plowed for oats. Others plow once acrofs, cutting the plits of the old turf at right angle; afterwards gathering a bout, that is, laying two plits back to back; in each interfurrow; to drain more effectually the wide ridges, in which the lands of the diftrict are chiefly laid. Others break the ground (provincially "work their brufhes"—) by two plowings—the firft acrofs, the laft lengthway: and fome few by three plowings; lengthway, acrofs, lengthway.

The first is a filthy-looking, flovenly bufines; though a common practice. The fecond, with the fame labour, is infinitely preferable; and, in a wet autumn, may be more eligible than breaking the ground by a greater number of plowings. When the feason

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feafon and other circumstances will permit, the last is, no doubt, to be preferred.

MANURE. The manure process likewise varies. If the turf has been recently manured, previous to the oat crop, or the foil otherwise in good heart, the wheat is frequently fown without manure. When manure is used, dung—provincially "muck" —is the prevailing species. If the ground be only once plowed, the muck is generally laid upon the stubble, and plowed under, with the one plowing. If the ground be broken, it is common to lay it on the cross plowing, and plow it under with the feed plowing.

One circumstance in the manure process for wheat requires to be noticed. It is common, though not universal, to set the muck upon the land in a raw long strawy state; carrying it immediately from the yard to the field, without having been previously turned up and digested. This is probably a dreg of the common field husbandry; in which the yard muck was, perhaps judiciously, left unmoved; with the intent that its strawiness might prevent the too fallowy mould of land, fummerfallowed every third year, from being run together by heavy rains (see MIN. 21). But,

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But, in pinfallowed inclosures, the twitch alone is too frequently more than adequate to this intention; and to throw additional incumbrances in the way of the harrow is certainly reprehensible.

Sowing. The time of forwing—October. Little is fown before new Michaelmas: and if the feasion be favourable, little after the close of October.

Preparing the feed is not univerfally attended to. Much feed is fown without preparation; which, I understand, is of modern date, as a practice, in this district. The preparation, in the best esteem, is the common one of fwimming in brine, and candying with lime.

The mode of fowing, broadcaft, and generally above furrow; the foil being feldom got fine enough to plow in the feed.

The quantity of feed, pretty univerfally, three bushels an acre; without much regard to the time of fowing.

VEGETATING PROCESS. Handweeded: no hoing of wheat in this diffrict.—For opinions on eating wheat with fheep, and on harrowing wheat in the fpring, fee MIN. 113.

HAR-

HARVESTING has been described.—For observations on gleaning, and reaping by women, see MIN. 80. and on *(hucking*, 10. and 81.

YARD MANAGEMENT. The long ftraw is bound in fmall truffes,—provincially "battins;"—with the heads and the buts feparate; for thatch; and for litter for inns, &c. &c.

MARKETS. The millers of the furrounding country; who grind it for Birmingham, and the other manufacturing towns.

The PRODUCE very high. The par produce full THREE QUARTERS an acre, ninegallon measure. Four and even five quarters an acre are produced: especially of the *Esser dun* species: and particularly in the practice of Mr. Princep; who has grown FIVE QUARTERS, all round his extensive farm, and in the year 1784 grew, on fifty acres sogether, FORTYFIVE BUSHELS an acre!

For an inftance of fowing oats over a thin crop of wheat, fee MIN. 5.

For experiments and observations on the effect of berbery on wheat, 7.

For an incident on *[mut*, 8.

For observations on *sbucking*, 10.

For an incident on *fmoothing* the rough furrows of a *clover ley*, 20.

For

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For an incident on *forwing* the whole fure row of a clover ley, 40.

For remarks on the nature of blights, 65. For an inftance of blight, 74. For remarks on *reaping* by the threave, 75. For an inftance of weeding wheat flubble, 77. For remarks on gleaning, 80. For further observations on flucking, 81.

• For the effect of *forwing* wheat on clover ley immediately after the plow, 96.

For opinions on *eating* and *harrowing* wheat, the MIN. 113.

25.

BARLEY.

THE SPECIES OF BARLEY in cultivation, here, are

Hordeum zeocriton; Lungeared Barley. Hordeum difliction; sprat barley.

The latter is the old ftock of the country; the former of late introduction; of not more, I understand, than about fifty years standing. The sprat is deemed more hardy, and requires 240

quires to be fown more early; the longear to be the better yielder. The fprat is thought (by maltiters) to make the beft keeping beer; the longear to be "freer"—to operate quicker—both in the malthouse and the cellar.

The longear is not unfrequently had out of Kent, under the name of THANET BAR-LEY; which, at prefent, is in the first estimation.

SUCCESSION. In the ordinary practice of the diffrict, barley fucceeds wheat. When turneps are grown, it fucceeds that crop.

It is observable, however, that on the ftrong lands of *this* district, the crop, after wheat, is less productive, and much less *certain*, than it is after turneps *. But the fame circumstance is observed in Norfolk, where the foil is much lighter. See NORF. ECON. v. i. p. 237.

Barley is likewife fown, and of late years not unfrequently, on *turf*; and with good fuccels +.

TILLAGE.

* On the lighter lands, on the skirts of the Forest, it is faid to answer perfectly well after turneps. See MIN.92.

† One superior manager has sown barley on turf, for more than twenty years; getting extraordinary crops from this practice.

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TILLAGE. After wheat, the foil is winterfallowed,—provincially "pin-fallowed "" by three plowings: the first, lengthway, in November, &c.; the second across, in March, &c.; the last, the seed plowing, lengthway. Between the two last plowings the soil is harrowed, and the twitch shock out with forks, and lest, loose and light, on the surface, to die; being seldom, in common practice at least, either burnt or carried off. If the weather prove dry and parching, this may be an easy way of checking the foulness.

After turneps—the foil has generally three plowings: for the turneps being moftly folded off with fheep, the foil, naturally of a close texture, is thought to receive a degree of compactnefs, ill fuited to the fibrils of this delicate plant, until it be broken, and rendered porous, by tillage.

Sowing. The time of forwing, if the weather will permit, is the two laft weeks in April and the first in May: the Midland farmers going entirely by the ALMANACK—if they can—not by the SEASON.

The

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* PIN-FALLOW. The origin of this term I have not learnt: it appears to be fynonymous with WINTER-FALLOW, OF BARLEY FALLOW.

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The quantity of feed—two bushels and a half to three bushels an acre; and, in the practice of fome men, fo much as four bushels; though, perhaps, unneceffarily.

The method of forwing—broadcast; mostly above; but fometimes, if the land be got very fine, the feed is plowed under.

Adjusting. If the harrow leave any clods unreduced on the furface, they are broken with the clotting beetle by women, &c.; and if any twitch be pulled up in harrowing, it is fhook out loofe, with forks, and left on the furface to wither. Both of them eligible operations—where they are wanted.

The weeding,

The HARVESTING, and

The YARD MANAGEMENT of barley appear, aforegoing, under these general heads.

MARKETS. The Burton breweries; and the manufacturing towns; where incredible quantities of malt are faid to be confumed.

PRODUCE, —extraordinarily large. Seven quarters an acre is no unufual crop: eight quarters have been grown. One fuperior manager frequently grows fix or feven quarters round. Four to four and a half quarters an acre may be taken as the par produce.

For

For an experiment with barley on clover ley, see MIN. 9.

For an incident on *plowing in feed* barley, 41. For inftances of barley badly *barvefled*, 83. For a detail of my own practice, 90.

For observations on the time of forwing, 90: For initances of barley miscarrying, after inrneps, 92.

For inftance of froft's *ripening* barley, 93. For a further detail of my own practice, 102. For the refult of this practice, 117.

For inftances of the bad quality of barley, fee MIN. 117.

26.

OATS.

THE SPECIES OF OAT at prefent in effeem is the "DUTCH OAT"—the fame or fimilar to the Friezland oat of Yorkshire. The POLAND OAT, which was the favorite, is going out of repute; on account of the thickness of its skin.

R 2

The

The succession, uniformly, turf, -- oats.

The TILLAGE,—one plowing in February, March, or April.

Sowing. Time of forving, latter end of March and beginning of April. Quantity of feed,—four to five bufhels. The fame obfervation, with respect to the feed of oats, has been made here as in Yorkshire; the produce being in proportion to the quantity of feed: hence fix or feven bushels are fown in the practice of fome individuals. Sow broadcaft: —cover with the harrow; adjust by turfing. See general head SEMINATION.

For weeding,—HARVESTING, and YARD MANAGEMENT, fee the general heads.

MARKETS. Notwithstanding the quantity of oats grown in the district, a principal part of them is expended on *farm horfes*! others go to the *inns* of the district, and the furrounding country.

PRODUCE. Sward being the matrix, no wonder the produce is abundant. Six quarters an acre may be confidered as the par produce of oats on turf, in the Midland Diftrict.

For observations on the time of fowing, see MIN. 82.

For remarks on *harvefting*, 82.

PULSE.

PULSE.

IN THE INCLOSURES of the Midland Diffrict, little of this clafs of grain is cultivated.

BEANS and DILLS (a fpecies of large vetch; the Yorkshire *fitches*. See YORK. ECON.) are the prevailing crop.

The only circumstance of their culture which is entitled to notice, belongs to the SEED PROCESS.

If beans alone be the crop, the furface, in

R 3

the practice of some, is nevertheless harrowed, as fine as if they had been sown abovefurrow; in others, the plits are left whole.

If the ground be broken, as a pin-fallow, —the beans and dills are fometimes both of them fown underfurrow, and plowed in together.

It is obfervable that beans, plowed under whole furrows, rife principally in the fearns; but fome of them through the furrows or plits. They have even been obferved to force their way through a footpath, though trodden as firm as a plafter floor !

The difadvantage of plowing beans under whole furrows arifes principally, it is underftood, in their lying hollow; thereby fpending their first and main effort in running under the furrows; never, in this cafe, reaching the furface. Hence the use of turning the furrows as *flat* as possible. When the feason will permit, *rolling* would, under this idea, be of effential fervice.

For harvesting beans, see the general article, Harvesting loose Corn.

POTATOES.

POTATOES.

THE SPECIES, or rather VARIETIES of potatoes have, of late years, undergone a total change, in this diftrict.

The old varieties, formerly in cultivation, dwindling in produce, and being, at length, in a manner deftroyed, by the difeafe of CURLEDTOP,—two new varieties were introduced,—under the names of GOLDFINDERS and GOLDENDABS;—the former a yellow kidneylike root (but with a fcurfy rind, not unlike that of the old ruffet potatoe); the latter of a fimilar colour but of a different form, being fomewhat bellfhaped. The confequence has been, the difeafe vanifhed with the old forts, and is now (1786) and in *this* neighbourhood, where no other fort is in ordinary cultivation, in a manner forgot.

In 1789, I met with a finalar inftance in Leicestershire; where the "old red fort" was R 4 entirely entirely worn out with the difease; while a white fort, now in cultivation, was "never known to curl."

In Rutland/hire I had ocular evidence of the fame nature. Observing, in a large piece of potatoes, two stripes which were almost wholly curled, while the reft of the piece appeared to be free from the disease, I enquired into the caufe of difparity; and received in answer, without hesitation, that the healthy plants were "manleys," and the difeafed ftripes " rednofed kidneys;" which, heretofore, was the prevailing species; but being no longer to be cultivated with any degree of fuccefs, a new fort was, fome years ago, introduced under the name of the "manley," which still remains free from the disease.

These are evidences, and strong ones. that the discase of CURLEDTOP is incident to varieties; and the circumstance of the old forts, which have been in cultivation from the first introduction of potatoes into the island, being now almost wholly cut off by it,--renders it probable that the difease is incident to declining varieties of POTATOES; as the canker is to declining varieties of FRUIT. See GLO. ECON. See alfo YORK. ECON. ii. 52.

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The CULTIVATION of potatoes, in this diffrict, though it does not require to be given in detail, throughout, is entitled, in feveral particulars, to notice.

SUCCESSION. Contrary to the practices of most other districts, potatoes, here, succeed *turf*: are planted, almost invariably, on grafsland.

SOIL PROCESS. The *plow* is feldom, if ever, ufed, here, in the cultivation of the potatoe crop. The foil is broken up with the *fpade*: fometimes in two fhallow fpits, throwing the fward and the dung, if any be ufed, to the bottom; covering them, in the gardener's manner, with the under fpit: but, generally, in one full fpit; merely inverting the fward; fitting the fpits to each other; leaving a fmooth even furface of clear free foil.

PLANTING. On this furface the plants are dibbled very thick, about the middle of April *. The

* Potatoes are fometimes grown two years together on the fame land; and, in this cafe, *it is faid* to have been found that dibbling in the fets, on the ftale furface, as left, on taking up the first crop, or only levelled with the harrow, without a previous plowing or digging, is the most eligible method of putting in the fecond crop: this, however, by way of hint. The VEGETATING PROCESS confifts in hoing, once, twice, or as often as circumftances may require; the crop, throughout, being mostly, though not always, managed in a gardenly manner.

The crop is TAKEN UP with forks, in the gardener's method, about the middle of October: the price of taking up is according to the crop; generally, I believe, from 1d. to 2d. a bufhcl.

PRESERVING. The method of laying up potatoes, here, is, univerfally, that of "camping" them: a method which requires to be defcribed.

"CAMPS" are fhallow pits, filled, and ridged up as a roof, with potatoes; which are covered up with the excavated mould of the pit.

This is a happy mean between burying them in *deep pits*, and laying them upon the *furface*. See YORK. ECON. v. ii. p. 62.

Camps are of various fizes; being too frequently made in a longfquare form, like a corn rick, and of a fize proportioned to the quantity to be laid up. It has, however, been found, by experience, that, when the quantity is large, they are liable to heat and fpoil: fpoil : much damage having fometimes been fuftained by this imprudence.

Experienced campers hold, that a camp fhould not be more than three feet wide: four feet is, perhaps, as wide as it can be made with propriety; proportioning the *length* to the quantity: or, if this be very large, forming a range of fhort ones, by the fide of each other.

The usual depth is a foot.

The bottom of the trench being bedded with dry straw, the potatoes are deposited; ridging them up, as in measuring them with a bushel. On each fide the roof, long wheat straw is laid, neatly and evenly, as thatch; and over this the mould, raifed out of the trench, is evenly spread : making the surface firm and sinooth with the back of the spade. A coat of coal as is sometimes spread over the mould; as a still better guard against frost.

It is needlefs to obferve that a camp fhould have a dry fituation; or that the roots ought to be deposited in as dry a state as possible.

These camps are *tapped* at the end; fome battins, or a quantity of loose ftraw, being thrust close into the opened end, as a *bung* or fafeguard.

MARKETS

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MARKETS and EXMENDITURE. Birmingham, the other manufacturing towns, and the collieries are conftant markets for this valuable crop. And befide what go to market, great quantities are expended, in a plentiful year, on the fatting of fwine; and fome few have been given to cattle.

The price, in a plentiful year, very low; feldom more than a fhilling a bufhel: in 1785, they were fold, at the time of taking up, at ten pence: in December, they were fold at a fhilling; and warranted to weigh 80lb. a bufhel. How cheap, as an article of human food !

PRODUCE. Extraordinary large. By information, that I have no reafon to doubt, and in two or three different inftances, fix hundred bufhels an acre have been produced ! feven ftrike a "rood" (of eight yards fquare) has, not unfrequently, been grown. Four to five ftrike a rood, or three to four hundred bufhels an acre, is reckoned a fair good crop.

For the practice of planting the nooks of corn fields, fee MIN. 44.

For an inflance of the mafter and his men going halves in a potatoe crop, 63.

TURNEPS.

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T U R N E P S.

THE TURNEP CROP, though cultivated in a good manner by a few fuperior managers, does not enter into the ordinary practice of *this* diffrict. At prefent, not one acre in a hundred, taking the diffrict throughout, is fubjected to the turnep culture. I have rode through a fucceffion of townfhips without feeing an acre of turneps; and, of those that are fown, few are cultivated in a hufbandly manner.

Nevertheles, there are, here and there, on *this* fide of the Tame, a patch of turneps to be feen, fet out and cleaned in a hufbandlike ftyle.

West of the Tame, where the foil is light, and the fubfoil abforbent, the turnep crop forms the basis of the present husbandry: and this notwithstanding the proper management ment of the crop may be faid to be new to this quarter of the kingdom. The hoing of turneps has not been established, as a practice in *kusbandry*, more, perhaps, than twenty years. To the MARQUIS TOWN-SHEND, who sent hoers out of Norfolk, the country, I understand, is indebted for its establishment.

There may be two reasons why the turnep culture does not become prevalent in this district.

Grafs can be had at will; the whole diftrict being prone to it; while the foil and the fubfoil, except in fome particular fituations, are, *perbaps*, ineligible for this crop. One ftrong evidence, at leaft, may be produced in corroboration of this idea. One of the largest farmers in the district grows no turneps; and gives this as a reason for his conduct.

The first year his father gave up the mamagement of his farm to him; fome twelve or fifteen years ago; he grew a piece of turneps 1 the first the farm produced. The crop turned out pretty good; and he began, agreeably to the common practice of the country, to fold them off with sheep. But the piece lying lying flat, and the weather proving wet, his fheep did "fadly;" and what was worfe to a young farmer, his father laughed at him. He littered them in the clofe, with ftraw; but this would not remedy the evil: at laft he drew the turneps; and threw them to the fheep on an adjoining piece; but even then, they did no good upon them. In fhort, he fpeaks of eating turneps upon the ground with fheep as a thing impracticable !

I do not mention this circumstance to throw a damp on the culture of turneps; but to endeavour to affign them their proper foil and fituation; by showing, in striking colours, the difficulties to which the crop is liable, on strong retentive land.

The other circumstance which has tended to check the cultivation of the turnep crop, was the devastation of the turnep caterpillar in 1782: (See NORF. ECON.) fince which time its culture has been declining, rather than gaining ground.

On a light dry turnep foil, in an upland fituation, this crop is in a degree neceffary; and, there, little difficulties are ftruggled with, and mifcarriages foon forgot. Here, on the contrary, contrary, where the land will remain in grafs, and where other arable crops are more certain and more productive, the turnep crop is lefs effential to good hufbandry: though, in particular fituations, even in this diffrict, I am fully perfuaded, by my own experience, it may, under proper management, frequently be ufeful.

The only circumstances, in the practice of this district, that require to be registered, fall under the heads succession, sowing, HOING, and EXPENDITURE.

SUCCESSION. There is an inftance of their being fown on *old fivard*, (a rich bottom) on one plowing, without fodburning; yet with good fuccefs.

I have feen a *clover ley*, plowed up immediately after the first crop was off, fown with turneps, and with a good appearance of a crop.

But the most extraordinary circumstance I have met with in the turnep culture, is that of fowing them on *barley stubble*, immediately, after the crop was off, *without plozving* !

Some sheepfeed, in the spring, is all that is expected from this practice: and is not, it seems, unfrequently obtained. While the . foil foil is in heart; the crop of barley good, and the furface of courfe *clean*; that is, free from the *berbage* of weeds; this may, fometimes, on a fheep farm, and under particular circumftances, be a valuable expedient. If the attempt mifcarry, the feed, only, is loft. The *thought*, at leaft, is worth preferving; efpecially as the inftance which came more particularly to my knowledge, occurred in the practice of a judicious manager.

Sowing. The deviation to be noticed is in the method of forwing : inftead of delivering the feed from between the two fingers and the thumb, as is usually done, the feedman (fome feedfmen at least) lets it fall back into the palm of his hand, and delivers it from thence, in the manner corn is fown. It is observable that in this method of fowing, it is neceffary to keep the fingers close; otherwife, the feeds of turneps being fmall, they are liable to fly out between them. I mention this as a deviation, rather than a superior excellency. I have feen turneps come up very even from this method of fowing; but not evener, than I have feen them rife in Norfolk, from the common method.

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For

For observations on hoing, in this diftrict, see min. 6.

EXPENDITURE. The expedient I have feen practifed, in this stage of the turnep culture, is that of drawing the turneps, at the setting in of a frost, or to clear the ground in the spring, and loading them upon waggons; leaving them in the piece, where they are safe, and ready to be drawn to whence they may be wanted.

For obf. on the Midland practice of boing, see MIN. 6.

For obf. on handweeding, 16.

For an inftance of *plowing in* turneps as a manure, 34.

For an inftance of young turneps *thriving* in drought, 43.

For inftances of the enemies of turneps, 61.

For an inftance of *hoing* clufters, 79. For further obf. on turnep *infects*, 84. For general obf. on the turnep *culture*, 87. For practical obf. on *hoing*, 87. For inftances of turneps being unfriendly

to barley, 92.

For obl. on turneping in frost, 115.

CABBAGES.

ĆABBAGE**S**.

THE SOILS of this diffrict are better adapted to CABBAGES, than to turneps. Confidering the facility of the culture of this erop, and the great produce it yields when a proper fort is planted on a fuitable foil, and confidering the length of time cabbages have now been cultivated as a crop in hufbandry, it is remarkable that they have not entered more freely into the general practice of this diffrict; to whofe foil and fituation they are peculiarly well adapted.

At prefent, the quantity grown is inconfiderable: I have feen, however, feveral fmall patches in different parts of the diffrict; and, from the manner in which the value of thefe is fpoken of, there is fome probability of cabbages becoming a prevalent crop.

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Among

Among the rambreeders of Leicestershire, &cc. they may be faid to be already established as such; and there is one man within this district, Mr. PAGET of Ibstock, who is the greatest cabbage grower I have any where observed *. He has grown ten, twelve, or fourteen acres, a year, for many years past.

On the CULTIVATION of this crop fo much has been faid, the public could receive little ufeful information from a recital of the practice of this diffrict.

Indeed, the art of CULTIVATING cabbages is fo extremely fimple, and fo well underftood by every farmer, gardener, and cottager in the kingdom, it, perhaps, of all other operations in hufbandry, requires the leaft explanation.

Much, however, depends on the species or fort for field culture. Not more on the fize, than on the nutritivenefs of quality and bardinefs, in refifting the feverity of winter.

There is, in this country, a valuable fort—a large green cabbage—propagated, if

· Excepting, perhaps, Mr. BAKEWELL of Difhley.

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if not raifed, by Mr. BAKEWELL, who is not more celebrated for his breed of rams, than for his breed of cabbages.

Great care is observed, here, in RAISING THE SEED; being careful to fuffer no other variety of the braffica tribe to blow near seed cabbages; by which means they are kept " true to their kind." To this end, some, it is faid, plant them in a piece of wheat: a good method; provided the seed in that situation can be preferved from birds.

The principal advantage of largeness in fize of field cabbages is, that of being able to plant them wide enough from each other to admit of their being cleaned with the plow; and yet to afford a full crop.

The PROPER DISTANCE, therefore, depends in fome measure on the natural fize of the fpecies, and the ftrength of the foil. The thinner they ftand, the larger, no doubt, they will grow; but the closer the more numerous: and I am of opinion that cabbages, as turneps, are frequently fet out too thin. Mr. PAGET'S diftances are four feet by two and a half: a full diftance, in my opinion, for large cabbages on a rich foil.

S 3

The

The EXBENDITURE of cabbages, here, is chiefly on *fbeep*; but *cattle* and *fwime* have a proportion. But, what is extraordinary, I have not in this, or any other diffrict, met with an inftance of cabbages being given to *borfes*: and yet it is more than probable, that, either alone or mixed with chaf or "cutmeat," they might be rendered a valuable fpecies of horfe food.

For ample observations on the culture, of this crop, fee MINUTES of AGRICUL-TURE in SURREY; DIGEST, p. 95, and the MINUTES thence referred to.

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CULTIVATED

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CULTIVATED GRASSES.

THE PERENNIAL LEY is feldom the object of cultivation, in this diffrict; the culture of graffes being confined to TEMPORARY LEYS; and chiefly to one fpecies, which may be faid to be peculiar to the diffrict; and which, though of long duration, compared with the temporary leys of other diffricts, cannot be deemed perennial; its continuance being limited to fix or feven years: and, in diffinction, I fhall term it SEXENNIAL LEY: befide which the ANNUAL C CLOVER LEY will require to be noticed,

CLOVER. It appears, by the COURSE OF HUSBANDRY already given, that the practice of growing wheat on a clover ley, agreeably to the modern practice of the kingdom at lage, is not prevalent here. Neverthelefs, the practice is fometimes ufed; more effe-S 4 cially cially in the common fields, where it has been introduced, in feveral inftances, as a fubfitute of the bean crop.

When wheat is fown on the first year's ley, it is usual to mow the clover twice: under an idea, that a full crop of clover mown twice in the feason, fmothers weeds of every kind; even couch! It no doubt gives them a great check.

It is observable, however, that, in the commonfield practice, by fowing clover every third year, the crop, though abundant for awhile, foon begins to fail: even in fo short a time as twelve or sisten years. See also NORF. ECON. on this circumstance,

This circumstance is not introduced, here, as an evidence against the cultivation of clover; which is evidently, on a noncalcarious foil, by much the most valuable *leaf grafs* (if the term were admissible) agriculture is at present acquainted with; but to put those who have fresh ground in their possession, or their guard in its cultivation.

TURF; OT SIXYEARS LEY. In the inclosed townships, this is the prevailing and almot only ley: furnishing, in its different stage, the two grand crops; CLOVER and GRASS.

'n,

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In the ordinary practice of the country, the method of cultivating it is merely that of fowing about ten pounds of RED CLOVER, at the time of fowing the barley.

To the red clover, fome judicious managers, in this part of the diffrict, add a fmall quantity of clean RAYGRASS, with a few pounds of WHITE CLOVER.

There are, however, men, and those of the first abilities, on the lighter lands, round the skirts of the Charnwood hills, who, though advocates for raygrass, think white clover unneceffary; finding, that whether they fow any or none, their leys are equally full of it.

When this is the cafe, it would, indeed, be folly to throw away the feed: but there are few lands that are bleft with fo defirable a quality as that of affording, naturally, a turf of white clover. By manuring highly, this valuable herb, efpecially on light free lands, may generally be obtained in fufficient quantity; and it is by those who generally manure their young leys on fuch land, that white clover is omitted to be fown.

In the MANAGEMENT of YOUNG SEEDS it is observable that, in the common practice of the district, and I understand universally, they are

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are eaten off with fheep in autumn. This I mention, not as a pattern to be copied implicitly, but as a circumftance in provincial practice. If they be eaten off in dry weather, and not too closely, the effect, it is poffible, may not be fo prejudicial as is generally conceived.

The first, and sometimes the second year, the young leys are mown, as CLOVER : the last four or five, they are grazed, as GRASSLAND.

The CLOVER of young leys is feldom mown more than once *; but, contrary to the practice of other diffricts, it is frequently fuffered to run up, into head, as if for mowing a fecond time, before flock be turned upon it ! In

• A very fuperior manager of this diffrict paftures, in the fpring, his clover leys which are intended to be mown for hay ;—fometimes fo late as the beginning of June: and gives a threefold reafon in fupport of his practice. The feedage of clover, in May, is valuable: a full crop of clover is made with difficulty and uncertainty: and the hay of fuch a crop, he conceives to be lefs valuable in quality than what he calls half a erop: and, upon his land, his reafoning may be conclusive; a rich free loam, in high cultivation, recently inclosed, and the clover crop new to it; the crops of courfe prodigious.—On a lefs productive foil, however, and this already exhausted by clover, even half a crop 'could not be obtained, with any degree of certainty, by that management.

31.

31. MIDLAND COUNTIES.

In this ftate, flock of every kind are admitted; particularly rams, as will hereafter appear: but horfes *, and even cattle, are turned into clover belly-deep! and this without apprehenfion of danger: it being found, by experience, that it is lefs dangerous to cattle in this, than in a younger ftate.

For an inftance of drawing the common thiftle out of young leys, fee art. CORN WEEDS.

For the AFTERMANAGEMENT of these TEM-PORARY LEVS, see the next article; they being confidered, in practice, after the second year, as analogous with older GRASSLANDS.

* For an inflance of clover in this flate being affected by and friendly to horfes, fee MIN. 17.

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G R A S S L A N D.

THE SPECIES OF GRASSLAND, in the DISTRICT of the STATION, are, chiefly,

LOWLAND GRASS, or "MEADOW;" and

MIDDLELAND GRASS, or "TURF:" there being no UPLAND GRASS OF SHEEPWALK within it; except fome heathlets, toward the Derbyfhire margin.

MIDDLELAND GRASS, or "TURF." This includes the principal part of the grafslands of the diftrict. It confifts chiefly of the TEM-PORARY LEYS mentioned in the laft article; with a flight intermixture of OLD GRASSLAND, —provincially "OLD TURF :" namely, lands that have lain, fome centuries perhaps, in aftate of grafs; many of them being now over-run, as fuch lands too often are in other diftricts, with anthills and other encumbrances; fome of them as full of anthills as a foreft, and almoft as rough.

In foil and fituation, these OLD GRASSLANDS are fimilar to those of the temporary leys of the arable lands; and their management is the

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the fame. All, therefore, that requires to be faid of them is, that they ought not to remain any longer a difgrace to the hufbandry of the diftrict; but ought either to be fubjected to the general management of the country, or to be rendered productive, as grafsland, by clearing them from their prefent encumbrances.

The GENERAL MANAGEMENT of this class of grafslands is that of keeping them conftantly in the ftate of PASTURAGE; as grazing or dairy grounds.

In the MINUTIAL MANAGEMENT of PAS-TURE GROUNDS, a few particulars require to be noticed: though taken all together, the practice of this diffrict (nor indeed that of any other individual diffrict I have yet feen) cannot be held out as a pattern. See the RURAL ECONOMY OF YORKSHIRE; in which the fubject of GRASSLAND is treated of analytically, and its feveral departments explained.

In the *fpring management* of *pastures*, a practice prevails, in this neighbourhood, which I have not met with elsewhere.

In grounds which are fed in winter, cattle are induced to fly to the hedges for shelter, and there to drop their dung. And it is the custom, here, to set women to collect the dung,

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dung, thus partially and fuperfluoufly fcattered, into heaps; and to cart it into the middle of the piece, and then fpread it upon the parts which most require it : while fome individuals pile it in large heaps, to be fet about in winter; objecting to the practice of fpreading it over the grafs in the fpring, as tending to foul it : and, under the fame idea, object to fpreading the dung, dropt in the area of the piece,—late in the fpring : efteeming it better management to collect and carry it off, to be fet about in a more fuitable feason.

The whole of this practice, so far as relates to the collecting of dung on pasture lands, more especially old pasture lands, may be eligible. But I am of opinion, that dung thus collected, ought not to be set upon pasture ground; especially such as, having been long in a state of pasturage, may be in a degree stated with this species of manure; but should be carted to the dungyard for the use of the arable land, or piled in heaps for the use of more grounds: not, however, to be set on in winter—the worst season possible—but immediately after the hay is off: refreshing the pasture pasture grounds, if they require it, by some change of manure *.

For the *flocking* of *paftures*, fee the article GRAZING.

In what may be termed the winter management of paftures, this diffrict furnishes an instance of practice, which is well entitled to a place in this register: namely, that of shutting up pasture grounds, in autumn, for a supply of SPRING FEED.

Mr. PAGET of Ibstock, in whose superior management I more particularly observed this admirable stroke of practice, shuts up from

* MOLES. A remarkable circumstance in the prefent state of agriculture of this district is the fearcity of moles. A mole hill is rarely seen. There are perhaps entire townships without a single mole in them.

Two reasons may be affigned for this circumstance. There are in this district few *old bedgerows*, and still less *woodland*: both of them nurferies of moles. And while they are thus defitute of shelter, it is the practice for townships to join in their destruction.

The price, in a township which has been neglected and the number of moles confiderable, is about a penny an acre a year: afterwards not more than a halfpenny an acre: not more than two guineas perhaps for a middlefized township: and this, under due attention, becomes in a few years a mere finecure: except near woods; where they can feldom be wholly overcome.

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from the middle of September to about old Michaelmas, as the age of the grafs, the feafon, and other circumstances fuit; making a point of eating the ground level and bare. previous to its being freed from flock: from which it is kept free, until it be wanted for ewes and lambs; or, if it be intended for cattle, until the first shoot of grass in the fpring; which, mingling with the autumnal shoots, the herbage is found to be more nutritious to flock than either of them are feparately. As a certain and wholefome fupply of food for ewes and lambs, in early fpring, this preserved pasture is depended upon as the sheet-anchor; in preference to turneps, cabbages, or any other species, whatever, of what is termed SPRING FEED.

For observations on PRESERVING AFTER-GRASS, as a supply of spring feed, see York. Econ. v. ii. p. 148.

LOWLAND GRASS, or "MEADOW." The meadowlands of this diffrict confift of the banks of rivers, and of the bottoms, or dips of vallies, fcattered over almost every part of it.

These meadows are mostly kept as MOWING GROUNDS; and the particulars, belonging to their

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their MANAGEMENT, which will require to be noticed, fall under the heads

> Draining, Watering, Hay harveft, Aftergrafs.

DRAINING. This operation, whether with respect to underdrains or furface drains, is well attended to, here; better, I think, than in any other district which has fallen under my observation.

Underdraining has been already mentioned under the article SOIL PROCESS; and all that requires to be faid of *furface draining* is; that it is generally done in the proper feason: autumn, or the beginning of winter. See NORF. EEON.

For instances of practice in draining meadow lands, see the MINUTES referred to below.

WATERING MEADOWS. The watering of meadows cannot be faid to have yet entered into the common practice of this diftrict. Neverthelefs, it has made fome confiderable progrefs toward it. Many of the fuperior clafs of occupiers have, already, evinced their Vol. I. T fpirit. 274

fpirit, at leaft, in profecuting this CARDINAL IMPROVEMENT.

There are, indeed, a few inftances, in which the art has reached a degree of perfection, equal, perhaps, to that which it has attained in any other part of the ifland. But as I ftill hope to fee this department of rural affairs on what may be termed its own native foil, the MORE WESTERN COUNTIES, where it appears to have been first practifed, in this island, and where, only, I believe, it has been received into common practice,—I shall forbear giving a *detail* of it in this place. Neverthelefs, there are *circumftances*, in the practice of this district, which require to be noticed.

The ORIGIN of meliorating grasslands with water may be traced, pretty evidently, in this diftrict.

The benefit of NATURAL FLOODS, to the grafslands they occasionally overflowed, being evident, and in fome inftances great, the means of producing ARTIFICIAL FLOODS, and of spreading them over lands, not liable, in their natural situation, to be overflowed, would become, of course, a defirable object.

The most obvious effect of floods, or overflowings of rivers and brooks, on the landsover

j2. MIDLAND COUNTIES.

over which they fpread, is that of *depositing* their earthy particles; thereby operating as a **VEHICLE OF MANURE.** It is likewife evident to common observation, that foul waters, as those of floods, let fall their fediment most freely in a *flagnant flate*. And it is also equally evident, that the flate of flagnation of the waters of floods, or a flate that approaches it, is caused by some obstruction of the current, below the place of flagnation.

These circumstances being seen, and they could not well be missed by any one who gave the subject a second thought, the means of manuring lands with water, artificially, were given : in situations, I mean, which would admit of the requisite obstructions.

The dips or vallies which abound, more or lefs, in every quarter of the kingdom, and which are mentioned above, were most apt subjects for flooding, artificially, with foul waters, on the principle of MANURING the land with their SEDIMENT.

A bank or dam being made acrofs the valley, below the part to be manured, the rivulet, which always accompanies a valley of this kind, especially after heavy rains, the T 2 only only time when flooding on this principle could be practifed, would of courfe be obftructed; and its waters, fouled, perhaps, with the richeft particles of arable lands, would be fpread over the bottom of the valley, to an extent proportioned to the height of the bank, and its own flatnefs; a valve or floodgate being fixed in the bed of the rivulet, to let off the waters, when the *whole* of their foulnefs were deposited: thus gaining a principal advantage over natural flooding; in which the groffer particles, only, are let fall; the finer, and perhaps moft valuable, escaping to the river, and thence to the sea, before they be precipitated.

On these principles, it is evident, some of the meadow lands of this district have formerly been flooded *: and it is not probable that so evident a method of improving meadow lands should have been confined to this district; but may have been common to other parts of the island.

But the ANTIENT METHOD of meliorating grafslands, by the means of STAGNANT WA-TER, could no longer prevail, than until the fupe-

* See MIN. 27.

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fuperior effects of RUNNING WATER, on fuch lands, were difcovered and afcertained.

This important difcovery must have been made, by observation, on the comparative effects of running and standing water, in the natural or artificial flooding above fpoken of; and must have been ascertained, by a long course of experience : it is not likely that reafon should have had any fhare, in ftriking out the Mo-DERN METHOD of improving grasslands, by For even now, when RUNNING WATER. the reality of the improvement appears to be fully established, there seems to be no fatiffactory theory to account for it. The warmth. communicated by running water to the grafs it flows over, is the best account that the most enlightened in the art can give, of the good effect of running water, on grassland.

Even after the difcovery was made, and the effect fully established, it would be fome length of time, before the art arrived at its prefent high degree of perfection. It may, in its prefent state, be fafely deemed the most scientific operation that has entered into the common practice of husbandry.

To the memory of the inventor or in ventors be the highest praise !

T 3

If the art, as it now ftands, were ftruck out on PRINCIPLE, it must have been on that of ANIMAL CIRCULATION; to which the operation of meliorating grafslands with water, through the means of FLOATS and DRAINS, is perfectly analogous.

The *floats* are *arteries*, conveying the circulating fluid to every part of the fubject; imbuing every atom : the *drains*, *veins*, collecting the fcattered fluid, and conveying it back to its natural channel.

In lefs figurative language, the floats are trenches, receiving, by the means of floodgates, as occasion requires, the waters of a river, brook, or rivulet, and conveying it along the upper margin, and upon the tops of the natural or artificial swells of the field of improvement : the drains, counter trenches, ftretching along the lower margin, and winding in the dips and hollows, to receive the water spread over the furface by the floats.

Each fet of trenches, whether of floats or drains, bears more or lefs refemblance to a tree, with its trunk and branches: the branches of the floats increasing in number, and diminishing in fize, as they proceed from the river or other source; those of the drains, on the conMIDLAND COUNTIES.

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contrary, diminishing in number and increasing in fize, as they approach the receptacle.

When the water is at "work" (as it is properly enough termed) the entire furface (fuppofing the operation to be *perfect*) is covered with one continued sheet of LIVING WATER; purling evenly over every part, fome inch or more deep. If the grafs be very fhort, the water is feen; and has a beautiful as well as a profitable effect: if not, it fteals unfeen among the herbage; or fhows itfelf partially: it being impoffible, in practice, to render the fheet, throughout, of a uniform depth or thicknefs.

From this general idea of the method of watering grafslands, on the modern principle, it is evident, that a *dead flat*, a *perfect level*, is, of all other, the worft adapted to the practice.

A perfect level, however, feldom occurs in nature : inequalities, fufficiently to promote a circulation of water on turf, may generally be difcovered, if judiciously fought.

In the MIDLAND COUNTIES, I have feen, in the practice of a fuperior manager, a beau-T 4 tifully tifully fimple expedient practifed, to find out the inequalities of a piece of ground, nearly flat: that of covering it with water; and preferving the level by the means of " levelling pegs:" flumps or piles driven down, in various parts, to a level with the furface of the water; fo that after the water was let off, the level ftill remained. The parts laft covered were, of courfe, the proper ground for the floats; the parts laft freed, for the drains: art being ufed, where wanted, to give additional advantage to the natural inequalities.

Situations, in general, abound fufficiently with inequalities of furface: natural, as the *fwells and hollows* of lands lying out of the way of floods, and having never been plowed: artificial, as those which have been raifed by the plow into *ridge and furrow*: in this case, the ridges receive the floats, the furrows the drains: in that, the level (the spirit level, or perhaps only a plummer) is the guide to the floats; the water they throw out, to the drains.

In this diffrict, I have feen the *fide of a bill* watered with rain water from a road running along the top of it : the fame trench, in this cafe, cafe, acting as float and drain; running, a zigzag, along the face of the flope; the lower folds catching the water fpread out by the upper.

I have likewise observed, in this district, feveral instances of *ridges and furrows* being watered from similar fources. In these cases, whether the natural descent of the lands were little or great, the floats were opened upon the ridges, with clods of turf, cut out of the trenches, placed, at distances proportioned to the descent, to check the current sufficiently, to force the water out of the trench above, yet leaving it a sufficient passage, to fuffer it to carry down a supply to the parts below.

In this diffrict, alfo, I have met with one or more inftances in which *ridges and furrows* have been *levelled*! at an exceffive coft, by paring off the turf, throwing down the ridges by hand, and replacing the turf! giving the furface one regular gentle defcent : and this, notwithftanding it is allowed, by those who may be ftyled masters in the art, that THE QUICKER THE CIRCULATION, THE MORE BENEFICIAL THE EFFECT.

Upon the whole, it appears pretty evidently, that the operation, though *fcientific*, can feldom be rendered *mechanical*, Straight

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Straight lines and plain furfaces can feldom be had, but at a great and, frequently, an unneceffary expence. The given fituation of the ground fhould be confulted, and maturely ftudied, before the work be fet about. Every fite may be faid to require a different arrangement of trenches. Of courfe, no man ought to fet about a work of fo difficult a nature, until he has ftudied its principles, and made himfelf mafter of its *theory*: nor, then, without the affiftance of *practice*, in himfelf or others.

To expatiate on the UTILITY of watering grafslands would be a wafte of words. In fituations where a *fufficient fupply* of water, of a *fertilizing quality*, can be commanded, at all *feafons*, it ranks, indifputably, among the higheft clafs of improvements.

Much, however, depends on the QUALITY of the water: not on its colour or clearnefs, but on the fpecific quality of its fulpended particles. Waters, in their natural flate (not purified by diffillation), more effectially fpring waters, though perfectly transparent and pure to the eye, are various in quality, as foils are: owing to earthy and other particles being fulpended in them, imperceptibly to the eye; requiring the aid of chemistry to detect them. Hence hard water, foft water, wholefome waters, and medicinal waters. For a striking effect of clear spring water, see MIN. 39.

But although much may depend on the quality of water, for the purpose of meliorating grasslands, still more, perhaps, depends on the QUANTITY; on having a sufficient fupply at all feasons. With this, there are, perhaps, few waters which might not be rendered beneficial to grassland, if thrown over it at proper feasons, and in proper quantity: without it, the benefit, it is poffible, may not be adequate to the expence. The greateft, at least the most obvious, advantage of watering grasslands arifes in a dry feason; and if the fupply fail in fuch feafons, as frequently happens, in many fituations, the intention is in part frustrated: the early spring waterings being, in this cafe, all that can be commanded.

This, however, by way of caution: not as a difcouragement to the practice. There are, in this island, fituations innumerable, in which the advantages arifing to the practice, properly conducted, would far exceed the the expence of obtaining them : and to afcertain them is an object of the first magnitude to the owners and occupiers of grasslands.

Thus, having endeavoured to convey a general idea, to those who are unacquainted with the subject, of the nature, the operation, and the effect of watering grasslands, on the principle of circulation, I will mention a few interesting circumstances of practice, which occurred to my observation, in this Midland district.

Mr. BAKEWELL of Difhley stands first, in this quarter of the kingdom, as an improver of grasslands by watering.

Formerly, a fuite of meadows, lying by the banks of the Soar, received confiderable benefit from the water of the river being judiciously foread over them, in the times of floods. But, now, not only these meadows, but near a hundred acres, I believe, of higher land, lying entirely out of the way of natural floods, are watered on the modern principle,

Mr. Bakewell, like a man of experience in bufinels, before he fet about this great work, fludied the art in the principal fcene of practice;

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practice; the weft of England; where he fpent fome days with the ingenious Mr. BoswELL, who, fome years ago, published a treatife on the fubject *.

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The great stroke of management, in this department of Mr. Bakewell's practice, which marks his genius in strong characters, is that of diverting to his purpose a rivulet or strule to a struke of finall brook, whose natural channel skirts the farthest boundary of his farm; falling, with a considerable descent, down a narrow valley; in which its utility, as a source of improvement to land, was confined.

This rivulet is therefore turned, at the higheft place that could be commanded, and carried, in the canal manner, round the point of a fwell, which lies between its natural bed and the farmery : by the execution of this admirable thought, not only commanding the fkirts of the hill as a fite of improvement by watering; but fupplying by this ARTIFICIAL BROOK (fee YORK. ECON. i. 174.) the house and farm offices with water : --filling

• Mr. Boswell's TREATISE, ON WATERING GRASSLANDS, cannot be too firongly recommended to those who wish to become acquainted with the practice.

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-filling from it a drinking pool, for horfes and cattle; a wash pool, for sheep; and converting it to a multitude of other purposes •: acquisitions which many other fituations in the island are capable of furnishing.

Mr. B.'s improvements, in this department of rural affairs, are not only extensive, but high; and are rendered the more striking, by "proof pieces" (a good term for experimental patches) left in each site of improvement. Mr. Bakewell is, in truth, a master in the art; and Dishley, at prefent,

* One of which is too valuable to be passed without diffinction. Three years ago, Mr. B. I remember: was endeavouring to invent a flatbottomed boat, or barge, to navigate upon this canal; for the purpole, most particularly, of conveying his turneps from the field to the cattle sheds. But finding this not easily practicable, his great mind ftruck out, or rather caught, the beautifully fimple idea of launching the turneps themfelves into the water; and letting them float down fingly with the current ! "We throw them in, and bid them meet us at the Barn End !!!" where he is now (October 1789) contriving a refervoir, or dry dock, for them to fail into: with a grate at the bottom to let out the water; but retaining the turneps; which will there be laid up, clean washed, and freightfree, as a supply in frosty weather j

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fent, a *fchool* in which it might be ftudied with fingular advantage.

Mr. PAGET of Ibstock is also a proficient in the science and art of watering grasslands, on the modern principle. He cuts a considerable quantity of hay, annually, from lands which have received no other manure than water, during the last forty years. A striking instance, this, that water is not merely a *flimulus* or *force*, as forme men conceive it to be; but communicates some actual *nutriment* to the herbage *.

Mr. MOOR of Appleby has executed a confiderable work of this kind, and in a judicious manner; cutting a fresh channel, on one fide of the fite of improvement, for a rivulet which winded through its middle; in order to prevent its overflowing at an improper feason; and converting the old channel (partially filled up) into a main float: an expedient which may frequently be practifed with good effect.

And

• One circumftance which occurred in Mr. P.'s practice ought to be mentioned, by way of caution. By watering an ORCHARD with the wafhings of the fireet and yards of a neighbouring village (a defirable fpecies of water) the fruit trees were greatly injured: and in Mr. B.'s practice, a fimilar circumftance took place. And Mr. WILKS of Meesham, among his various and extraordinary exertions of genius and spirit, has not neglected the watering of grasslands: a species of rural improvement which he is prosecuting with, perhaps, unexampled ardour.

In this neighbourhood, there are two inftances of practice, which form a ftriking contraft : one was done at a great expence, with an uncertain fupply of water : the other at a trifling coft, with an abundant fupply, at all feafons. But as the comparative effect of thefe two incidents of practice will appear, under ftriking circumftances, in the MINUTES, it is unneceffary to fay more on the fubject, here.

HAYING. The harvefting of *berbage* is among the first concerns of husbandry. The quality, and of course the value, of hay depends, in a great measure, on the state in which it is laid up. *Grain*, though liable to damage, by a long continuance of unfavourable weather, is much less hazardous than herbage.

Nevertheles, in many, or most, parts of the kingdom, we find HAYMAKING, notwithstanding it is one of the oldest operations in

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in husbandry, the least understood, or the most neglected. In this district, it is found in a state of the lowest neglect.

The ordinary practice of the diffrict is this: —the fwaths are fpread immediately, or prefently, after the mowers, with little or no regard to the weather: fuffering the grafs to lie abroad, no matter how long, until the top be dry. It is then turned; and, the other fide being dried, it is raked into rows; and carried, as it becomes dry: beginning the rick, perhaps, as foon as one load is ready; letting it lie abroad, continuing to add load after load, until it be topped up. During the two hay harvefts I was in the diffrict, I do not recollect to have feen, in its practice, a HAYcock, of any fize or form; fome bundles of clover hay excepted.

But a main ftimulus to good management, emulation, appears to be here wanting, in this cafe. It is no difgrace to make bad hay. Every thing is attributed to the weather. All the praife of hay-making is given to him who has done first; and all its difgrace falls on him who finishes last.

In 1784, a difficult seafon, a first-rate farmer bragged of his having made, that year, all Vol. I. U forts

forts of hay; as cow hay, flirk hay, and "pig hay:" namely, fome fo bad as to be fit for litter only.

In 1785, when hay was four or five pounds a ton, I have feen a very industrious painstaking farmer tedding his hay while it actually rained : giving as a reason for his conduct, that it must be spread about, and it might as well be done sooner as later. Yet I had heard this very man offering, only a few days before, a speculative price of four guineas a ton for "good" hay, to be delivered the ensuing winter for his own use! Nevertheles, the hay under notice lay several days abroad, before it was deemed sufficiently dry on the top to be turned !

These circumstances are not mentioned illnaturedly; but to shew, the last more particularly, which occurred in the practice of one of the shrewdest best managers in his neighbourhood, that the art is not sufficiently understood: though, in the practice of some few individuals, it may be superior to the ordinary practice of the district.

For practice in SURREY, see MIN. of Agric.

For the practice of YORKSHIRE, see YORK. ECON.

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For the practice of GLOCESTERSHIRE, see GLO. ECON.

AFTERGRASS. The management of aftergrafs, here, is in general judicious. It is ge-· nerallý fuffered to get up to a full bite, before it be broken: not turned in upon, as in GLO-CESTERSHIRE, as foon as the hay is off: nor fuffered, as in YORKSHIRE, to stand until much of it be wasted. For further remarks on this fubject, see MIN. 62.

In the *flocking* of lattermath, likewife, the Midland graziers are judicious : efteeming it bad management to overflock it. A cow an acre, on well grown aftergrafs, feems to be confidered as full flock.

REFERENCES to the MINUTES on GRASSLAND.

For observations on the ancient method of Hosting grassland by "floating upward," fee MIN. 27.

For inftance of practice in furface draining, fee MIN. 22.

Tor Hor the practice of burning dead grafs, and the dangerous confequences, 38.

8. For the effect of calcarious water on land, SOB MIN: 39-

For observations on the water of the Dove, 81. 42. LSTOCK.

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For an inftance of great profit by watering, see MIN. 46.

For the propriety of cutting *furface drains* where fods are wanted, 49.

For experience and the expence in mowing off the weeds of pafture grounds, 51.

For lifts of graffes and weeds, and observations on agricultural botany, 55.

For observations on *baying in drought*, and on the small *produce* of hay in 1785, 56.

For remarks on eating lattermath, 62.

For practice in spreading the mould of furface drains, 64.

For practice and expence of clearing drinking pits, 66.

For practical observations on watering ridges, 68.

For farther observations on spreading the mould of *furface drains*, 69.

For opinion that geefe are eligible in pafture grounds, 72.

For observations on the meadow foftgrafs, see MIN. 73.

For obfervations on the creeping crowfoot, 85. For inftances of *haying* in September, 88.

LIVESTOCK.

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LIVESTOCK.

A DISTRICT, rich in foil, and much of it in a flate of herbage, naturally abounds with LIVESTOCK.

In the MIDLAND DISTRICT, the four principal fpecies are found in peculiar plenty, and in a fingular state of improvement. The other three I shall pass over. RABBITS cannot be deemed an object of the rural economy of this district; and with regard to POULTRY and BEES, nothing sufficiently striking has occurred to me in it, to require particular notice *.

Therefore, this division of the prefent work will be confined to

Horfes,		Sheep,	
Çattle,		Swine,	
·	U3		A country

* Except that GAME FOWLS are, here, in the first estimation, as a species of FOULTRY; as producing more eggs, and being, themselves, better *steffed* and better flavoured than fowls in general,

A country that has defervedly obtained for much credit by its management of livestock, especially the three species first mentioned, and which has carried on the improvement of the feveral species, more particularly those of cattle and sheep, with a spirit unknown before, and has raifed them to a height unattained, perhaps, in any age or nation, is entitled to every attention. It would, indeed, be unpardonable, and altogether inconfistent with this undertaking, to pass over its practice in a superficial manner. The spirit of improvement is now in the zenith, and the improvement itself, taken in a general light, is now, probably, at its height. The breed of horfes of this diffrict is allowed to be on the decline. Its breed of cattle are probably at its height. And its sheep are at present so near perfection, that it is not probable they should hereafter receive much improvement. Befide, the grand luminary of the art has paffed the meridian, and though at prefent in full fplendor, is verging toward the horizon.

It must not, however, be understood, by those who are not locally acquainted with this district, that Mr. BAKEWELL, though he has been

been long, and most defervedly, confidered as the principal promoter of the ART OF BREED-ING, and has for fome length of time taken the lead, is the only man of diftinguished merit in this department of rural affairs, in the district under survey. It abounds, and has, for many years, abounded, with intelligent and spirited breeders. I could mention fome fifteen or twenty men of repute, and most of them men of confiderable property, who are in the same department, and several of them eminent for their breeds of stock.

Neverthelefs, it must be and is acknowledged, that Mr. BAKEWELL is at the head of the department;—and, whenever he may drop, it is much to be feared, and highly probable, that another leader, of equal fpirit, and equal abilities, will not be found to fuc, ceed him,

Having faid this, however, it will be proper to apprize my readers still farther, that the following account must not be understood as a detail of the practice of Mr. BAKEWELL; but as a more enlarged register of the practice at prefent established in the MIDLAND COUN-TIES. For notwithstanding I have been re-U 4 peatedly

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peatedly favoured with opportunities of making ample observation on Mr. BAREWELL's practice; and have, as repeatedly, been favoured with his liberal communications on rural subjects; it is not my intention to deal out Mr. B.'s private opinions, or even to attempt a recital of his particular practice, any other than as it constitutes a valuable part of the practice of the district under survey.

In registering this practice, it will be requifite, befide a separate account of the several BREEDS and their IMPROVEMENT, to describe the methods of BREEDING and REARING each species, and to detail the bufiness of GRAZING, and the DAIRY MANAGE-MENT.

To give full fcope to the enquiry, it will be neceffary to take a feparate view of each fpecies of liveftock, that are here the objects of attention; and, previoufly, to convey fome general ideas refpecting the PRINCIPLES of IMPROVEMENT, which have, here, been laid down, and the MEANS, by which they have been fuccefsfully, and rapidly, raifed_into practice. The fubject is new, at leaft to this work, and will therefore require a degree of attention adequate to its importance.

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The most general principle is BEAUTY OF FORM;—a principle which has been applied in common to the four species. It is obfervable, however, that this principle was more closely attended to at the outset of improvement (under an idea, in some degree falsely grounded, that BEAUTY OF FORM and UTILITY are inseparable) than at present, when men who have been long conversant in practice, make a distinction between a "useful fort," and a fort which is merely "handfome."

The next principle attended to is a PRO-PORTION OF PARTS, or what may be called UTILITY OF FORM, abftractedly confidered from the BEAUTY OF FORM: thus, of the three edible fpecies, the parts which are deemed OFFAL, or which bear an INFERIOR PRICE at market, fhould be fmall, in proportion to the better parts. This principle, however, appears to have been differently attended to in different fpecies; and will rèquire to be re-examined, in taking the feparate view of each fpecies.

A third principle of improvement, which has engaged the attention of the Midland breeders, 2.98

breeders, is the texture of the mulcular parts —or what is termed FLESH: a quality of liveftock which, familiar as it may long have been to the butcher and the confumer, has not, perhaps, been attended to by breeders, whatever it may have been by graziers, until of late years in this diffrict; where the "FLESH" is now fpoken of with the fame familiarity as the hide or the fleece; and where it is clearly underftood, that the grain of the meat depends wholly on the BREED, not, as has been heretofore confidered, on the size of the animal *.

But the principle which, at prefent, engroffes the greateft fhare of attention, and which, above all others, is entitled to the grazier's attention, is FAT, —or rather FATTING QUALITY: that is, a natural propenfity to acquire a flate of fatnefs, at an early age, and, when at full keep, in a flort space of time: another quality which is found to be hereditary;—

• It appears, however, in the practice of YORESHIRE (vol. ii. p. 183.), that circumstances led the breeders of that country to pay fome attention to the field of *cattle*: and I have been informed, by a gentleman conversant in the HEREFORDSHIRE breed of cattle, that fimilar circumstances took place, and probably about the fame time, in that quarter of the island.

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tary ;---depending, in fome confiderable degree at leaft, on BREED, or what is technically termed BLOOD : namely, on the specific quality of the parents.

Thus it appears, that the Midland breeders reft every thing on BREED; under a conviction, that the beauty and utility of form, the quality of the *flefb*, and its propenfity to *fatnefs*, are, in the offspring, the natural confequence of fimilar qualities in the parents. And, what is extremely interefting, it is evident from obfervation, that thefe four qualities are compatible; being frequently found united, in a remarkable manner, in the fame individuals.

Without admitting, or endeavouring to confute, in this place, that the four qualities, here explained, are the only ones neceffary to the perfection of the feveral fpecies of liveflock now under review, we pass on to the MEANS, whereby those principles have been applied, in attaining the degree of perfection, at present, observable in the district under furvey.

The MEANS OF IMPROVEMENT, in the established practice of the kingdom at large, are are those of felecting females from the native flock of the country, and CROSSING with males of an alien breed; under an opinion, which has been univerfally received, that continuing to breed from the fame line of parentage tends to weaken the breed.

Rooted, however, as this opinion has been, and univerfally as that practice has prevailed, there is little doubt of the fact, that the fuperior breeds of flock of this diffrict have been raifed by a practice directly contrary ;---that of breeding, not from the fame line only, but the fame family: a practice which has now been fo long established, as to have acquired a technical phrase to express it : " BREEDING INANDIN" is as familiar in the conversation of Midland breeders, as CROSSING is in that of other diffricts *. The fire and the daughter, the fon and the mother, the brother and the fifter, are, in the ordinary practice of fuperior breeders, now permitted to improve their own kind; and through the affiftance of this

• BREEDING INANDIN. This term, however, is not, I underftand, of Midland origin; claiming Newmarket as its birth-place; the idea it reprefents, being fruck out, and the practice in a degree established, by the gentlemen of the turf,

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this practice, as will appear, the *bold* leader of these improvements produced his celebrated stock.

The argument held out in its favour is, that there can be only one *beft* breed; and if this be *croffed*, it must necessfarily be with an *inferior* breed; the necessfary confequence of which must be an *adulteration*, not an *improvement*.

How far this novel practice may, in a general light, be confidered as fuperiorly eligible, would be improper to be difcuffed in *this* place; in which I mean to convey, only, a general idea of the prefent practice of the diftrict; in order to fave repetition, and to enable the reader to follow me through the feveral parts of the enquiry with greater eafe. To this intent, it muft likewife be underftood, that although much has probably been done by BREEDING INANDIN, much alfo has been done by CROSSING; not, however, by a mixture of alien breeds, but by uniting the fuperior branches of the fame breed.

• The degree of excellency obtained, however, through these means, is not more remarkable than the rapidity with which the improve-

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LIVESTOCK.

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improvement of the feveral breeds has been carried on, and extended; not over this diffrict only, but to various parts of the island.

But these circumstances, likewise, have arisen principally out of a mere point of practice; which, though not peculiar to this district, is nowhere, I believe, equally prevalent (except in Lincolnshire), and enters not, in any degree, into the practice of the island at large: in which breeders of every class rear or purchase their MALE STOCK.

Here, on the contrary, breeders mostly HIRE THEM BY THE SEASON, — of a few leading men, in the line of breeding males for this purpole; returning them, at the end of the feason, to their respective owners; who, during the time of letting, have their shows or exhibitions, to which dairymen, graziers, and stallion men repair, to choose and hire males for the coming feason.

Befide these private exhibitions, there are, annually, PUBLIC SHOWS, in different parts of the district, for the same purpose: thus ASHBY has its stallion show; LEICESTER its show of rams; and BOSWORTH has its show of 33. MIDLAND COUNTIES.

of bulls: not, however, merely for letting, but likewife for fale.

The practice of letting male flock, by the feason, is a department of rural affairs not known to the kingdom at large; forming a *new* fubject in the rural science.

In practice, however, it generally happens that a breeder of male flock—provincially, for want of a better term, called a "TUP-MAN," is likewife a DAIRYMAN, and frequntly a GRAZIER; Mr. BAKEWELL being the only man, in this diffrict, who confines his practice folely to BREEDING and LET-TING.

It must not, however, be understood that dairymen and graziers universally, throughout the district, hire their males of these superior breeders. Many of them still go on in the old track of rearing, or of purchasing of each other, agreeably to the practice of other districts.

The practice of LETTING OUT MALE STOCK by the feason being a fubject new to this undertaking, it will be proper, in this place, to examine it with due attention.

Its ORIGIN does not clearly appear. It has probably arifen in the letting of STALLIONS for

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for the spring season. A domestic industrious man has a good horfe; but is too attentive to the ordinary bulinels of his farm, to follow him every week to three or four markets, and too diffident to fet him off to advantage, and to enter into contests and unavoidable fouabbles with stallion men : while, to a man of more leifure and lefs modefty, a loofe calling is most agreeable. Thus both parties are ferved : the letter by receiving a fum certain and his horfe again; the hirer by getting a greater number of mares than the owner could have got. This mode of disposal would of course give a loofe to the breeding of stallions; for the breeder not only got rid of the difagreeable part of the business; but if his own neighbourhood were overstocked, he could, by this means, fend them to other districts. Similar circumstances might lead to the letting of BULLS and RAMS.

Be this as it may, the letting of RAMS has long been the practice of Lincolnfhire; and the letting of HORSES has probably been practifed, on a small scale, in many districts. But the letting of male stock, viewed in the general light we are now viewing it, was never applied, generally, to the three principal

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pal fpecies, until of late years in this diftrict. Mr. BAKEWELL, though he cannot be deemed the projector, has certainly been the principal promoter, of this branch of rural bufinefs.

The EFFECT of letting male flock has, probably, been greater than was foreseen. The great improvement which has been made in the flock of this diffrict is flriking; but may be accounted for in this practice. A fuperior male, the best for instance, inftead of being kept confined within the pale of his proprietor, or of being beneficial to a few neighbours only, became, through this practice, a treasure to the whole district : this year in one part of it, the next in another. Hence, even one fuperior male may change confiderably the breed of a country. But, in a year or two, his offspring are employed in forwarding the improvement. Such of his fons as prove of a fuperior quality are let out in a fimilar way; confequently the blood, in a fhort time, circulates through every part, and every man of spirit partakes of the advantage.

The METHOD of conducting this department of rural affairs, and the PRICES given, will appear under each species of stock.

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HORSES.

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HORSES.

THE SPECIES of horfe bred in this diffrict, is the BLACK CARTHORSE; for which the Midland Counties have, for fome length of time, been celebrated. Therefore, notwithftanding a full conviction in my own mind, of the unprofitablene's of this breed of horfes, as beafts of draft in hufbandry, it is neceffary to the due execution of this work, and for other reafons which will appear, to regifter the leading facts belonging to the prefent improved variety of the Midland Counties.

This variety is generally and well underflood to have taken its RISE in fix ZEA-LAND MARES, fent over from the Hague by the late LORD CHESTERFIELD, during his embaffy at that court.

Thefe

These mares finally refting at his lordship's feat at BRETBY, in the Derbyshire quarter of this district, the breed of that quarter became improved, and DERBYSHIRE, for some time, took the lead, in this species of stock.

But, in courfe of time, LEICESTERSHIRE (into which this improved breed had travelled) either through better fortune, or better management, got the lead,—and kept it: Derbyshire having been, for some years, indebted to Leicestershire, for their best stallions: so much depends on fortune, or management, or both, in breeding.

But although this may be deemed the origin of the prefent Leiceftershire breed, the FORM has been very much altered since its first establishment. During the last thirty years, the long forend, long back, and long thick hairy legs, have been contracting into a short thick carcase, a short but upright forend, and short clean legs: it having been at length discovered, by men of superior penetration, that strength and activity, rather than height and weight, are the more essential properties of farm horses: and there appears to be, at present, some hope of men X = 2 in 308

in general gaining their fenfes fo far, as to fee them in the fame light.

. The bandsomest horse I have seen of this breed, and perhaps the most picturable horse of this kind ever bred in the island, was a stallion of Mr. Bakewell, named K. He was, in reality, the fancied war horse of the German painters; who, in the huxuriance of imagination, never perhaps excelled the natural grandeur of this horfe. A man of moderate fize feemed to shrink behind his forend. which role fo perfectly upright, his ears ftood (as Mr. B. fays every horfe's ears ought to ftand !) perpendicularly over his fore feet. It may be faid, with little latitude, that, in grandeur and fymmetry of form, viewed as a picturable object, he exceeded as far the horfe which this fuperior breeder had the honor of showing to his majesty, and which. was afterwards shown, publickly, fomemonths agoin London, as that horse does the meanest of the breed. Nor was his form deficient in utility. He died, I think in 1785, at the age of nineteen years.

But the most *useful* horse I have seen of this breed is a much younger horse of Mr. B. whote

whole letter * I do not recollect. His carcafethick, his back fhort and ftraight, and his legs fhort and clean : as ftrong as an ox ; yet active as a poney ; equally fuitable for a cart or a lighter carriage :—a fpecies of animal, which, if it were fashionable as human food, would be full as eligible, for a farmer's use, as an ox, of equal ftrength and activity.

Another comparative advantage of the prefent improved variety, over the great loofe heavy fluggish forts of this breed, is its *hardinefs*: its thriving quality: its being able to carry flesh, or ftand hard work, with comparatively little provender.

Among faddle horfes, this diffinction, in individuals at leaft, is very obfervable; and there is no doubt of its belonging to diftinct breeds of horfes; and may, in much probability, belong to varieties; may be hereditary; may defcend with fome degree of certainty from parents to their offspring.

If hardine's of conftitution; if the natural propensity of thriving on a compara-X 3 tively

* Mr. Bakewell has adopted the fimple plan of diftinguishing not his horses only, but his bulls and rams ' by latters, instead of less elegant names.

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tively fmall proportion of food, obfervable in fome individuals, be in its nature, hereditary; be obtainable with any tolerable degree of certainty, by management in breeding; as those who have experience affert it is-not in this only, but in every other species of livestock;—it is a most interesting circumstance in the nature of domestic animals.

BREEDING. To gain a comprehensive idea of this subject, it will be proper to examine the male and female separately.

STALLIONS. Viewing the diftrict at large, ftallions are bred and managed in different ways. Some are bred by *farmers*, who draw them, and cover with them in the feafon, Others by *breeders*, who either cover with them themfelves, or let them out to others for the feafon, or fell them, altogether, to farmers or ftallionmen, who travel them about the country, as in the practice of other diftricts.

The letting is done either at the breeder's private flows, previously to the season of covering; or at a public show, where they are fold as well as let; as will appear in MIN. 37.

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The prices given for stallions,—by purchafe, are fifty to two hundred guineas,—by the feafon, forty to eighty or a hundred, by the mare, half a guinea to two guineas. The celebrated horse K. that has been described, covered many years at five guineas, and the horse, mentioned as having been shown in London, is rated at the same price.

The MARES are mostly kept by arable farmers, who work them in their teams, until near their times of foaling; and, moderately, afterward, while they fuckle; flutting up the foals during working hours; giving the mares not more, perhaps, than a month's refpite from work.

The best time of foaling is thought to be March and April: the time of weaning, October or November.

DISPOSAL. In the ordinary practice of the country, the breeders of thefe horfes fell them while *yearlings* (provincially "colts"), or perhaps when *foals*: namely, at fix or eighteen months old: but most generally the latter.

The first places of fale, for yearlings, are X 4 the

* The places of fale for foals are the autumnal fairs of Ashby (de la Zouch) and Loughborough (in Leicestershire), where they are taken with the dams, previously to their weaning. the autumnal fairs of Burton (on Trent), Rugby (in Warwickshire), and Ashburn (in Derbyshire), where they are mostly bought up by graziers of Leicestershire, and the other grazing parts of the Midland District; where they are grown, among the grazing stock, until the autumn following; when the graziers take them to

The fecond places of fale—Stafford and Rugby; where, at two years and a half old, they are bought up by the arable farmers (or dealers) of Buckinghamfhire, Berkfhire, Wiltfhire, and other weftern counties; where they are broken into harnefs, and worked until they be five, or, more generally, fix years old; when thefe farmers, or dealers who buy them up in the country, take them to

The *third place of fale*—London ! where they are finally purchased for drays, carts, waggons, coaches, the army, or any other purpose they turn out to be fit for.

The prices, for the laft ten years, have been, for foals, five to ten pounds or guineas; for yearlings, ten to fifteen or twenty; for twoyearolds, fifteen to twentyfive or thirty; for { xyearolds, twentyfive to forty guineas.

GENERAL

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GENERAL OBSERVATIONS. This breed of horses, viewed abstractedly in the light in which they here appear, are evidently a profitable species of livestock *. The breeder has the foals to help to maintain the mares. and to fland, in some degree, against their first cost, their loss of work, and their decline in value after a certain age. The grazier is well paid for his year's keep. And the arable farmer has not their improvement in price only, but their work, to make up, in fome measure, for their extraordinary keep. While the brewer, the carman, the carrier, the coachman, and the army contractor, are supplied with animals which they want, and which they cannot breed and rear, with the fame conveniency as the farmer.

Therefore,

• It must not, however, be underftood that all the horfes bred in the Midland District, pass thro' the stages, and fetch the prices, abovementioned, The breeder keeps them on, perhaps to the second stage; perhaps to the third; besides what he keeps for his own use and brings to a less prostable market. While some going blind, others lame, and others dying of the various discases to which this species of animal is liable, are never marketable. What I mean to convey is a general idea of the most prevalent practice of the district. Therefore, fo far as there is a market for fixyearold horfes of this breed, fo far, the breed is profitable to agriculture.

But viewing the bufinefs of agriculture in general, throughout the island, not one occupier in ten can partake of the profit; and being kept in agriculture, after they have reached that profitable age, they become indisputably one of its heaviest burdens. For. beside a ceffation of improvement of four or five guineas a year, a decline in value of as much, yearly, takes place. Even the brood ' mares, after they have passed that age, may. unlefs they are of a very fuperior quality, be deemed unprofitable to the farmer. Neverthelefs, we fee the majority of farmers, throughout the kingdom, working even barren mares and geldings down the stage of decline; though they know it will terminate in a ditch or a dog kennel. But, with the fame unconcern, fome men go to the gallows; though they know inevitable destruction will meet them there.

REFERENCES to the MINUTES on Horses.

For an inftance of their affecting, and thriving on, clover, fee MIN. 17.

For a description of Ashby fallion frow, 37. For

For an inftance of horfes requiring water at grafs, 58.

For inftances of the *flaggers* in horfes, 70. For further inftances of the *flaggers*, 104. For fill more inftances, fee MIN. 116.

CATTLE.

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THE BREED of this diffrict is the LONGHORNED: a breed which appears to have occupied, a length of time, the central parts of the ifland. See GLO. ECON.

In a general view, the old ftock of the country, notwithstanding the fingular efforts that have been made toward improvement, remains with little alteration. Each division of the district has still its own breed, distinguisstable from that of the other divisions. There is a similar distinction between the breeds of Staffordshire and Derbyshire, for instance, as there is between those of Herefordshire fordshire and Gloucestershire (see GLO. Ecow.). The breeds of other divisions of the district have characteristics sufficiently strong to show, that the longhorned breed of cattle have, during some length of time, been the prevailing stock of the country; and that, viewing the district at large, Leicestershire excepted, no radical change, nor any obvious improvement or alteration, has yet taken place. A striking instance, this, of the slow progress with which improvements in this department of rural economy are made, even when carried on with every advantage.

But notwithstanding the old stock may still be faid to be in possession of the country, every division of it wears, at present, strong marks of improvement. WARWICKSHIRE, STAFFORDSHIRE, and DERBYSHIRE, may contend for some share of this beneficial change; and in LEICESTERSHIRE, the improved breed may be said to have gained, already, a degree of establishment.

The HISTORY of this extraordinary improvement would be interesting and useful; as it might furnish useful ideas to the improvers of other breeds. All I am able to give is a sketch.

CRAVEN

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CRAVEN in YORKSHIRE has long been celebrated for a fuperior variety of the longhorned breed of cattle. From this fource, it is well known, the LANCASHIRE cows have been, and, I believe, ftill are drawn;—the flower of these celebrated cows originating in CRAVEN HEIFERS.

Formerly, the Craven breed feems to have extended, in a fimilar way, into WESTMORE-LAND, also an adjoining county. From Westmoreland, bulls and heifers of this breed found their way into the MIDLAND COUNTIES. The prefent improved breed is traceable, by the indifputable evidence of many perfons still living, to what was here called the " true old Westmoreland fort. *"

* The diffrict of WESTMORELAND, from whence these cattle were drawn, is its southernmost extremity; about Kirby-Lonsdale, on the borders of Lancashire, and in the immediate neighbourhood of Craven.

It is an interessing face, that while this breed has been under the most anxious cultivation, in the Midland Counties, it has been declining in Westmoreland; where it is now, I understand, giving way to the TEESWATER BREED. See YORK. ECON.

How is this to be reconciled? Is the Teefwater breed, for the foil and fituation of Weffmoreland, evidently fuperior to the Craven breed?.or has the change been wrought, *folely*, by the Craven breed's being debafed, in Weft-

It

It is generally underftood, here, that through this breed, and fome fortuitous circumftances, rather than from any fixed principles of improvement, Mr. WEBSTER of Warwickshire (of Canley near Coventry) became, fome forty or fifty years ago, posseffed of a fuperior breed of cattle; and continued, during many years, the leading breeder of the Midland Counties *. I have, indeed, heard it

Weftmoreland, through the circumstances of the beft of its bulls and heifers being drawn off by the Midland breeders; while the best of those of the Teefwater breed have been brought into it ?

This, among other changes of a fimilar kind, that have taken place in different parts of the island, form aninteresting subject of enquiry.

* Prior to Mr. WEBSTER's day (or rather perhaps to the time Mr. W.'s flock became popular) a fuperior breed of cattle made its appearance in *this* mighbourhood; at Linton; where one WELBY, a blackfmith and farmer, is faid, by those who remember his day, to have been in possession of a very valuable breed of cows; which were faid to have been originally from DRAKE-² Low on the banks of the Trent. Whatever might have been the quality of this breed, it was unfortunately cut off by the distemper; or fo far reduced by it as to lose its establishment as a separate breed.

Since this article and the above note were written, I have learnt from the best authority (Mr. PALFRET, anear neighbour and intimate acquaintance of Mr. Webster), that it faid, by a man who has himfelf been a breeder of fome eminence, "that Mr. Webster had the best stock, especially of *beace*, that ever were, or (he believed) ever will be, bred in the kingdom."

To this bold affertion, however, I am not ready to give full credit. I register it merely as an evidence of the high degree of excellency which Mr. Webster acquired. It is *improbable* that, after twenty or thirty years anxious attention, not of *one* man only, but of several, the breed, though excellent then, should not, fince, have received some degree of improvement •.

Be this as it may, Mr. BAKEWELL is well known to have got the lead, as a breeder of cattle, through the means of the CANLEY ftock.

that Mr. W.'s breed owes its original bafis to the fame fource : having brought with him, from the banks of the Trent, into Warwickshire, when he first fettled there, fome fixty or feventy years ago, fix cows of SIR THOMAS GRESLEY's breed : from which cows, and bulls from Westmoreland and "Lancashire," he raifed his celebrated stock.

* Another eminent breeder, on whole judgement I can better rely, is of opinion, that in beauty or utility of form they have received little, if any, improvement fince Mr. Webster's day; but thinks that in *fleft*, the more valuable quality, they have been improved.

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ftock. His celebrated bull TWÖPENNY, that may be faid to have first given the lead to Mr. B. was out of a cow, purchased, when a heifer, of Mr. Webster, and was got by a bull from Westmoreland; a bull purchased in Westmoreland.

Mr. FOWLER of Oxfordshire (of Rollright on the borders of Warwickshire), whose stock is at present in the first estimation, owes the superiority of his breed to the fame fource. His cows are of the Canley blood; and his bull SHAKESPEAR, the best stockgetter, I believe, the Midland District ever knew, was got by a grandson of Twopenny (out of a daughter of Twopenny), and a cow of the CANLEY blood.

Mr. PRINCEP of Derbyshire (of Croxall in this district) acknowledges to have raised his prefent noble herd of cows—the first dairy of longhorned cows in the kingdom, I believe, for form and fize taken jointly—from a cow by the name of BRIGHT; purchased of the late Mr. Chadwick of Castle Bromwich: which cow was got by Mr. Webster's BLOXEDGE bull, that is spoken of here, as being the purest fountain of the Canley blood *.

The

• The BLOXEDGE bull was out of a threeyearold heifer of Mr. Webster's best blood; but was got by a " Lanca-

The PRESENT STATE of the IMPROVED BREED of the MIDLAND COUNTIES, which might be well diftinguished by the CANLEY BREED, is the following.

Mr. BAKEWELL is in possession of many valuable individuals, males and females. His bull D. generally known by the name of the " mad bull," is a fine animal; and is a ftriking proof of the vulgar error, that breeding inandin, weakens the breed. He was got by a fon of Twopenny, out of a daughter and fifter of the fame celebrated bull; fhe being the produce of his own dam. Neverthelefs. D. is the fire of Shakespear, by another daughter of the fame bull, and is probably the most robust individual of the longhorned breed; while D. himfelf, at the age of twelve or thirteen years, is more active, and higher . mettled, than bulls in general are, at three or four years old.

This

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"Lancashire" bull, belonging to a neighbour of Mr. Webster. When a yearling, being unpromising, he was fold to a perfon by the name of BLOXEDGE. But turning out a remarkably good flockgetter, Mr. W. repurchased him, and used him several seasons. He was asterwards fold to Mr. Harrison of Drakenedge (Warwickshire), and Mr. Flavel of Hogshill (in this district), where he died.

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This has long been efteemed Mr. Bakewell's beft bull; and has been kept, principally, for his own ufe. He was never let, except part of a feafon to Mr. Fowler; but has had individual cows brought to him, at five guineas a cow.

Mr. Bakewell's cows are of the fineft mould, and the higheft quality: and his HEIFERS beautiful as tafte could well conceive them: clean and active as does. Mr. B.'s exhibition of cattle would gratify the moft indifferent spectator, and could not fail of being highly satisfactory to every lover of the rural science.

Mr. FOWLER'S cattle are, at prefent, in the higheft repute. His cows have long been confidered as of the first quality :----of the best Canley blood. And his bull SHAKESPEAR, already mentioned, has raifed them to a degree of perfection, which, in the opinion of the first judges, the breed of cattle under notice never before attained.

This bull is a ftriking specimen of what naturalists term ACCIDENTAE VARIETIES. Tho' bred in the manner that has been mentioned, he fcarcely inherits a single point of the longhorned breed; his horns excepted. When When I faw him in 1784, then fix years old, and fomewhat below his ufual condition, though by no means low in flesh, he was of this description.

His head chap and neck, remarkably fine and clean. His cheft extraordinarily deep; his brifket down to his knees. His chine thin : and rifing above the fhoulder points; leaving à hollow on each fide, behind them. His loin. of course, narrow at the chine; but remarkably wide at the hips; which protuberate in a fingular manner. His quarters long, in reality; but, in appearance, fhort; occasioned by a fingular formation of the rump. At first fight, it appears as if the tail, which stands forward, had been fevered from the vertebræ, by the chop of a cleaver, one of the vertebræ extracted, and the tail forced up to make good the joint : an appearance, which, on examining, is occafioned by fome remarkable wreaths of fat, formed round the fetting on of the tail : a circumstance, which, in a picture, would be deemed a deformity; but, as a point, is in the higheft effimation. The roundbones fnug; but the thighs rather full, and remark. ably let down. . The legs fhort and their bone fine. The carcale, throughout (the Y 2 chine

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CATTLE.

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chine excepted), large-roomy-deep and well fpread.

His horns apart, he had every point of a Holderness or a Teeswater bull. Could his horns have been changed, he would have passed, in Yorkshire, as an ordinary bull of either of these breeds. His two ends would have been thought tolerably good; but his middle very deficient. And I am of opinion, that had he been put to cows of these breeds, his flock would have been of a moderate quality. But being put to cows, deficient where he was full (the lower part of the thigh excepted), and full where he was deficient, he has raifed the longhorned breed to a degree of perfection which, without fo extraordinary a prodigy, they never might have reached.

No wonder that a form fo uncommon fhould ftrike the improvers of this breed of ftock; or that a carcafe they had been fo long ftriving in vain to produce, fhould be rated at a high price. His owner, however, happened to be among the first of his admirers, and could never be induced to part from him, even for a feason; except to Mr. PRINCEP; who had him two feasons, at the . extraordinary price of eighty guineas a feafon. A price at which no other bull has yet been let.

This extraordinary animal is now (1789) eleven years old, and firm in his conftitution; but fo lame, in his hind quarters, as to render him at prefent, and during the last feason, entirely useles.

His owner, however, has less to regret, as he is in posseficition of many valuable females of his produce; and of one male, now three years old, by the name of GARRICK *.

• This bull was out of a cow got by a bull of Mr. Bakewell, called the HAMPSHIRE BULL.

Thus, though we find Mr. Fowler, at prefent, in poffeffion of the lead, he has evidently obtained it through the affiftance of Mr. Bakewell's flock. But whether he has gained the afcendancy by accident, merely, or whether he had the better bafis to build upon, may be a moot point difficult to determine.

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Mr.

• Mr. PAGET of Leicefterfhire (Ibstock in this district) is likewise in possession of a promising young bull of the purest of the Rollright blood; got by Shakesspear, out of one of Mr. Fowler's best-bred cows. He is now a yearling; and leaps at five guineas a cow. Mr. Fowler's cows (about five and twenty in number) are many of them of an extraordinary mould; especially in the fineness of the forend, and the width and fatness of the hind quarters. A daughter and fister of Shakespear, being got on his own dam, is among the first of his herd: another evidence of the good effect of breeding from the same family *.

Mr. PRINCEP's cows, of his own breed, have been mentioned as being of a very fine quality: neverthelefs, his prefent herd wears evident marks of improvement. Every cow and heifer of the Shakespear blood is diftinguishable at fight;—by the extreme finenels of the forend,—the width of the hips,—and the formation of the rump; an em-

• Mr. Fowler conducts his business on the old principle of *felling*, not on the modern way of *letting*, his bulls. Such heifers, too, as his own dairy does not require, he fells, and at high prices. Mr. Core of Norfolk has had all the cow calves he could spare, during the last three or four years, at, I understand, ten guineas each; taking them while young. Mr. F. has now (October 1789) ten bull calves (all, I believe, by Garrick), for which, *it is faid*, he has refused five hundred guineas. empression which they have received with fingular exactness.

Mr. Princep has two valuable bulls, by Shakespear : one of them out of the celebrated BRIGHT.

Befide the three herds that are here particularized, there are many others, in the Midland Diftrict, that are entitled to great attention; but which, for various reafons, I think may, with propriety, be omitted in this regifter. Therefore, what remains to be added to the foregoing account of the prefent flate of the breed, is a GENERAL DE-SCRIPTION of its higher clafs of INDI-VIDUALS.

The forend long; but light, to a degree of elegance. The neck thin; the chap clean; the head fine, but long and tapering*.

The eye large, bright, and prominent.

The horns vary with the fex, &c. Those of bulls are comparatively short—from sifteen inches to two feet :—those of the few oxen that have been reared of this breed are extremely large :—two and a half to three and Y 4 u half

* A thick fhort head, with a fnub nofe, and a hollow face—provincially a "Dutch head"—is condemned, here, as a most hateful point.

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well turned, as many of the cows are, shoot forward at the points *.

The *foulders* remarkably thin and fine, as to bone, but thickly covered with flefh; not the fmallest protuberance of bone difcernible +.

The girt fmall, comparatively with the fhorthorned and middlehorned breeds ‡.

The

* Too frequently, however, the double bend does not take place; the horns continuing to fhoot downward, until they would reach the ground, or point inward until they would gag the mouth which fupports them, were not the points from time to time removed : and, in fome individuals, while one horn is pointing to the ground, or winding under the jaw fo as to prevent its opening, the other is fhooting away from the head, cr taking fome other aukward direction: thus tending to disfigure, and deftroy, the animal which nature ordained them to ornament and defend.

† The Difhley breed, I think, excels in this point 1. fome of the heifers have shoulders fine as race horses,

t Nevertheless there are some individuals, more particularly, perhaps, of Mr. Fowler's breed, that are tolerably well let down in the girt.

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The chine remarkably full, when fat; but hollow, when low in condition *.

The loin broad, and the bips remarkably wide, and protuberant +.

The quarters long and level; the nache of a middle width; with the tail fet on varioufly, even in individuals of the higheft repute \ddagger .

• This is confidered, by accurate judges, as a criterion of good flefth; as the large, hard, ligatures, which in fome individuals, when low in condition, we fee tightly faretched along the chine, from the fetting on of the neck to the fore part of the loins, is a mark of the flefth being of a bad quality.

+ The protuberance of the bones of the hips, is a point at prefent in the first fashion; but is always, I observe, mentioned in the language of enthusiasm, not of reason. A wide loin, with the hips protuberating in fat, is indifputably a most defirable thing. But what use, or even ornament, two knobs of bone can produce, is not to me evident. In fome individuals they have to me an artificial appearance; as if the loin were a lid, and the hips handles to remove it. I can admire a full hip, and conceive its utility; but I am clearly of opinion, that there are many points of a bullock better entitled to the breeder's attention, than a protuberant one; yet, it is more than probable, that, in the improvement both of this and the shorthorned breed, points of some confequence have been facrificed to this idol.

t The quarters of Shakelpear have been defcribed; those of the bull D, are not less remarkable: his tail appearing

The

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The roundbones fmall; but the thighs in general fleshy; tapering however, when in the best form, toward the gambrels.

The legs fmall and clean, but comparatively long *. The *feet* in general neat, and of the middle fize.

The carcafe as nearly a cylinder as the natural form of this animal will allow. The ribs ftanding out full from the fpine; receiving the *entrails* within them. The belly of course appears small \ddagger .

The

appearing to grow out of the top of his fpine, rather than to be a continuation of the vertebræ; the upper part of the tail forming an *arcb* which rifes fome inches above the general level of the back. This, viewing him as a picture, has a good effect; but, as a point, has a very bad one to the grazier; as tending to *bide* the fatnefs of the rump. It is remarkable, that in this, and many other points, the fon and the fire are as diffimilar as if they had no confanguinity.

• More owing, however, to the gauntness of the carcale, than the positive length of the legs.

+ The fmallnefs of the belly is held out as a fuperior excellency. The vifcera being lodged within the ribs is certainly fuch. But I cannot believe that a paucity of intestines is a valuable property of cattle: intestines are to them what roots are to trees. The ideas of *effal*, and largeness of *bone*, have, *perbaps*, in more points than one, led the improvers away from perfection. This, however, by the way.

The *fle/b*, of the fuperior class I am defcribing, feldom fails of being of the first quality.

The bide of a middle thickness.

The colour is various: the brindle, the finchback, and the pye, are common: the *lighter* they are, the better they feem to be in efteem *.

The fatting quality of this improved breed, in a flate of maturity, is indifputably good.

As GRAZIERS' STOCK, they undoubtedly rank high.

As DAIRY STOCK, however, their merit is lefs evident : dairywomen here, and elfewhere, bear witnefs against them : neverthelefs.

* This colour, however, appears to be merely a matter of fashion. Nevertheles, it strikes me that a *light* colour of cattle is advantageous to the grazier.—It is a fact, in the nature of vision, that white objects appear to the eye larger, than black ones of the fame fize; and a light-coloured bullock, no doubt, appears larger in a market, than a darker-coloured one, of the fame weight.

It may be remarked, in this place, that the fix cows which formed the bafis of Mr. Webster's breed, were red, and it is observable that fome of Mr. Fowler's best cows are of that colour. lefs, the advocates for the breed affert their eligibility in this character: fome, indeed, go fo far as to fay, that a cow which is profitable to the graziers is fo to the dairyman: a pofition that might be contradicted by a thoufand evidences.

Neverthelefs, it appears to me probable, that a cow may be fo conftitutioned, as to convert her aliment into milk, while milk is continued to be drawn from her, and, when the draught is ftopt, but not till then, to convert the fame current of chyle into fat : a verfatility of conftitution, however, which, I believe, does not belong to the breed under notice; whofe propenfity to fatnefs appears to be too great, to permit their lactefcent powers to preferve the afcendancy long enough for the purpofes of the dairyman.

As BEASTS OF DRAFT, the carcale of the longhorned breed, viewed generally, renders them unfit: nevertheles, the carcale of fome of the best of the variety under notice, is fufficiently powerful for the purpose of draft; while their natural activity, and cleanness of limbs, are very favourable to this purpose.

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But the enormous fize of the horns, of the oxen of this variety, would invalidate all their qualifications, were they greater than they really are. If they happen to take a convenient form, they may be difpenfed with; but flanding out aukwardly, as they frequently do, they become an infuperable objection.

A method of preventing their growth, or even of checking their exuberance, would be a most valuable discovery; to those, especially, who are in possession of the breed, and wish to make them useful as beasts of draft.

From this defcription of the improved breed of cattle of the Midland Counties, it appears very evidently, that the PRIN-CIPLES OF IMPROVEMENT, laid down aforegoing, have, to this fpecies of liveftock, been judicioufly applied. The UTILITY OF FORM has been ftrictly attended to: the bone and other offal fmall; and the forend light; while the chine, the loin, the rump, and the ribs are heavily loaded; and with flefh of the fineft quality.

BREEDING.

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BREEDING. The males and females require to be treated of feparately.

BULLS. Viewing the diffrict at large, its economy, with regard to bulls, is the fame as that of other places. Dairymen, in general, use their own bulls, generally of their own rearing; and fmaller cowkeepers employ those of their neighbours. But dairymen who pay a closer attention to their ftock, purchase their bulls, or hire them by the season, of bullbreeders; who rear, perhaps, five to ten bulls yearly; the superior breeders, for letting; the inferior, for fale.

The practice of *letting* this fpecies of male flock, probably, originated in this diffrict; and in the practice of Mr. Bakewell; about twentyfive years ago.

In the fpring, previously to the season of business, the breeders have their private shows; and beside these, as has been intimated aforegoing, there are public shows; more, however, for the purpose of sale, than of letting.

The prices given for bulls, by purchafe, run from five to a hundred pounds; by the feafon, from ten to fifty or fixty; by the cow, from half a crown to five guineas.

The

The let bulls are *fent out* in April or beginning of May; being generally led in halters; or driven fingly; and are *returned* at the end of the feafon-generally in August, in the fame manner.

With respect to the age at which bulls "do busines," as it is technically termed here the practice of this district differs from that of most others; where from two to four years old, namely three feasons, is the ordinary period of employment. But, here, they are pretty commonly allowed to leap while yearlings; and, if good stockgetters, are kept on so long as they will do business; perhaps till they are ten or twelve years old. If they grow vicious, they are kept wholly in the house; if they throw gates or break pasture, they are humbled by a " bull chain," fastened ingeniously to the nostrils.

This might be laid hold of as an argument against the practice of breeding inandin. It is, however, more probably owing to a different cause.

A hand-

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A handfome bull,—a bull nearly perfect in all his points,—is most difficult to breed : yet the breeder's object is to render him, to the eye at leaft, as near perfection as may be. He is, therefore, made up for the show, by high keep; as well to evince his propensity to fatness, as to hide his defects; thereby showing him off to the best advantage : the consequence of which is, being taken from this high keep, and lowered, at once, to a common cow pasture, he flags.

Hence, it is become a practice of judicious breeders, when their bulls are let early enough, to lower them down, by degrees, to ordinary keep, previous to the feason of employment.

BREEDING COWS. There is only one inftance, I believe, of cows being kept folely for the purpose of *breeding*: the *dairy* being here, as every where else, a joint intention.

Such as are not employed in the rearing of calves, ought certainly, in common good management, to be made to pay for their maintenance by *milking* or *working* : the last a use to which Mr. Bakewell alone, perhaps, has put them.

One

One circumstance in the management of breeding cows, practifed by leading breeders at least, is noticeable. In the practice of less spirited and less judicious breeders, a cow or heifer, if she happen to miss the bull, is profcribed, let her form and blood be what they may; and, as soon as her milk is obtained, is condemned, even for the first offence.

This, when dairying alone is the object of cowkeeping, is undoubtedly judicious; but, when breeding is a principal or even a joint object, as it is in the practice of most dairymen, such a conduct may be highly blameable. For though it may be easier to breed handsome good cows, than bulls of that description; yet, when we consider how much of the success of breeding depends on the female, it is evidently a want of common policy, to cut off a valuable cow, for one miscarriage.

If the do not breed this feafon, let her maintain herfelf by working, until the next. Mares are kept, year after year, without breeding. And if mares are found nearly equal to geldings, in work; why thould not cows be nearly equal to oxen, in the fame intention ?

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Vol. I.

REARING

REARING CATTLE. The rearing of cattle is here confined to BULLS and HEIFERS, for breeding and the dairy: there is not, in ordinary practice, a STEER reared in the diftrict; excepting fome few of late years, for the purpose of draft.

The METHOD of rearing, here, differs little from that of other diffricts; except in the rearing of BULL CALVES, and fometimes highbred heifers, by fuffering them to remain at the teat, until they be fix, nine, or perhaps twelve months old; letting them run, either with their dams; or, more frequently, efpecially where the dairy is an object, with lefs valuable cows or heifers, bought in for the purpofe; and, when the intention is fulfilled, fold, or fatted : each cow being generally allowed one male calf, or two females.

The effect of this practice is a quick growth; and, perhaps, like rearing vegetables in a rich foil, the practice may affift in meliorating the conftitution, and enlarging the frame. Be this as it may, the growth of calves, reared in this way, is ftrikingly rapid.

The best method of the dairymen is this : —The calves suck a week or a fortnight, ascording cording to their firength (a good rule): new milk in the pail, a few meals :---next, new milk and fkim milk mixt, a few meals more: then, fkim milk alone; or porridge, made with milk, water, ground oats, &c. and fometimes oilcake,----until cheefemaking commence: after which, whey porridge, or fweet whey, in the field; being careful to houfe them, in the night, until warm weather be confirmed.

Turneps are not thought of as a food of calves; nor, in the ordinary practice of the diftrict, is either corn, cake, or linfeed in use; milk, whey, hay, and grass, being the sole food of rearing calves •.

The time of rearing extends, in this diffrict, through the winter months; but is confined, in a great degree, between the beginning of December and the latter end of March.

In the treatment of YOUNG STOCK, I find little in the practice of this diffrict, that requires particular notice.

The bulls, in the common practice of dairymen, are fuffered to ride while yearlings;

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* Until autumn, when turneps are usually given.

namely,

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namely, at fifteen to eighteen months old; and the heifers to take them, while two years old; bringing them into the dairy at three years old: generally keeping them from the bull until late in the fummer,—as the latter end of July, or the beginning of August;—it being a pretty general opinion, that heifers should come in at grass: beside, by this practice, one bull ferves both the dairy cows and the heifers. I have known a dairy of twenty or thirty cows, and ten or twelve heifers, ferved by a "calf;"—a yearling bull.

In the practice of fuperior breeders, heifers are fometimes kept from the bull until they be three years old; bringing them in at four: efpecially in that of their enterprizing leader; in whole fuperior practice, maiden heifers, as well as dry and barren cows, are occafionally enured to harnefs: a laudable example, that might be profitably followed by every other breeder of cattle.

DAIRY COWS. Under this head, I shall confider cows, abstractedly, as they relate tothe DAIRY.

In the CHOICE OF COWS, dairy farmers are guided by criterions different from those which

which have been enumerated as the favourite points of graziers and modern breeders.

The DERBYSHIRE cow remains the favorite of the old "dairiers," They argue, that the grazier and the dairyman, diffinctly confidered, require different animals, to fuit their respective purposes. The dairier's object is milk; the grazier's beef; and it is a trite remark, among dairymen in different districts, that a cow which " runs to beef" is unprofitable to the dairy : for notwithstanding the excellency of her bag, and the plentifulness of her milk, prefently after calving, her natural inclination to fleshiness draws off her wills while a cow that is by breed, or natural conftitution, prone to milk, will supply this, at the expence of her carcafe, let her pafrure be ever so plentiful.

These popular opinions, however, though they contain much truth, are not altogether well founded. They hinge on a false principle. Cows are useful, and in a great degree neceffary, in a twofold capacity: as dairycows, and as grazing stock: the dairyman and the grazier *cannot* have distinct animals: one and the fame individual *must* ferve both their purposes. And a breed of cows fit for \mathbb{Z}_{3} the CATTLE.

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the grazier only, is, in a general light, not lefs eligible, than a breed which is fit only for the dairyman.

The Derbyshire cows are unprofitable as grazing stock. They have neither beauty nor utility of form; being loaded with offal of every kind. The head thick, the chap and neck foul; the bone proportionably large, the hide heavy, and the hair long: even the bag is not unfrequently so overgrown, as to be almost hid in hair; a point of milking cows to which dairymen, of most districts, have an objection: this however only ferves to show that popular criterions are feldom to be depended upon. Were the flesh and fatting quality of the Derbyshire cows equal to their quality as dairy cows, the hairines of their bags might well be dispensed with.

The STAFFORDSHIRE COWS bear a different characteristic. Taking them together, they are rather adapted to grazing, than the dairy; most of them being tolerably clean. But, in general, they are too gaunt in their carcases to be eligible, either as dairy or grazing stock.

Nevertheles, there are individuals of this breed; or rather, perhaps, of a breed between this and the Derbyshire; that may be faid to be

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be at once eligible as dairy cows and grazing ftock. At leaft, they come nearer my idea of what a cow ought to be, than any other breed or variety of the *longborned* breed, I have yet had an opportunity of observing.

Whether the individuals, now under notice, have or have not been produced by a mixture of the Staffordshire and Derbyshire blood, they are the most prevalent on the banks of the Trent, which divides the two counties : it is, indeed, the breed which is there found, more particularly on the Derbyshire fide, from Walton towards Stanton, which falls under this description.

The following are accurate dimensions of a middleaged cow of this kind; somewhat low in flesh, and young in calf.

Height at the withers, four feet two inches and a quarter.

------ of the brifket, nineteen inches.

Smallest girt, fix feet, five inches.

Largest girt, seven seet eight inches and a half. Length from forehead to nache, seven seet three inches.

from fhoulder-knob to the center of the hip, three feet eight inches.

from the center of the hip to the out ' of the nache, twentyone inches.

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Width

Width at the fhoulders, twenty inches.

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------ at the hips, twentytwo inches.

the nache, thirteen inches.

Length of the horns, twentyfour inches; their width from point to point, three feet four inches.

The forend fine, long, and ftanding low.

The head fmall, and the neck thin, but deep, according with the depth of her bofom,

The fhoulders fine; the ribs full; and the loin broad.

The thighs remarkably thin below, as if to give room to her bag, large, clean, and bladderlike; with long teats, and remarkably large elastic milk veins; furnishing an ample supply of milk.

The legs fhort, with the bone fine $(7\frac{1}{3})$ inches girt).

The flesh good, and the hide of a middle thickness.

The colour a "brinded mottle," with a "finch back," and white legs.

In temper remarkably cadifh, "gentle;" a quality of confiderable value, in a cow intended for the pail.

The principal diffinction observable, between the form of what is here spoken of as a dairy cow, and that of a cow of the modern dern breed, or what is more generally underflood by a "good grazier's cow," is, the former is more roomy and better let down in the cheft; the latter, better topped; fuller on the chine and loin; and, generally, fuller in the thigh, Both of them are clean in the forend, and fhoulder; the bone in both is fine; the flesh of both good (but that of the modern breed indisputably better); and their hides of a middle thicknes.

But the most material difference, and that which determines the *dairyman* in his choice, is, the one loses her milk a few months after calving; the other, if required, will milk the year round.

The PLACES OF PURCHASE of dairy cows are the fairs of the diftrict, and, during the fpring months, a weekly market at Derby; to which cows, fresh in milk, are brought, chiefly by drovers, and mostly without their calves.

. At the fairs, and in the ordinary practice of this diftrict, cows are almost invariably fold as *incalvers*; frequently at the point of calving; fometimes dropping their calves by the road. I recollect few if any inftances of feeing cows at market, with *calves at their feet*; agreeably

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ably to the ordinary practice of most other

The price of an incalver of the description last recited, has been, on a par of the last ten years, about ten pounds, or guineas.

The MANAGEMENT of DAIRY COWS. In their *fummer* management, I have met with nothing of fuperior excellence in this diffrict. They are turned to grafs, about Mayday; allowing from an acre and half to two acres to a cow: kept generally in one and the fame pafture, until aftergrafs be ready to receive them; and have turneps thrown to them (by thofe who grow turneps) on grafsland, in autumn.

In this district, however, one instance of practice occurred to me which requires to be registered; namely, that of a dairy of fourteen or fifteen cows being principally dried off togetber, on one day (the middle of December); preferving two or three, only, in milk, for the family, during the winter months; keeping these at hay; putting the dried cows to straw; for which purpose, only, they were dried off in this remarkable manner.

It

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districts.

It is observable, however, that this practice can be eligible only, when "cows come well in together:" to effect which they are "bulled as fast," that is to fay as near together, "as possible."

Unnatural as this expedient will no doubt be deemed by many, it may, neverthelefs, in fome cafes, be eligible : all I shall fay farther of it is, that had I not observed it in the practice of one of the oldest and best managers in the district, I should not have registered it •.

In the winter management of dairy cows, one circumftance may be noticed; that of their being frequently kept (in conformity to a modern practice adopted by fome leading men) in fheds, which have been defcribed under the head BUILDINGS, continually throughout winter, from the time of their being taken up in autumn, to that of their being turned to grafs in the fpring, generally four months,—without any exercife!

Some difcerning individuals, however, have already difcovered the inconveniencies of this practice, especially that of their hoofs cracking,

* Mr. LAKING, of Hall End, Warwickshire.

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CATTLE,

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cracking, let them loofe in a yard, a few hours every day, to moisten their feet, as well as to exercise their legs, and clean their coats,

The DISPOSAL OF COWS. In what might be called the natural practice of the diffrict, dairy farmers not only *rear* but *fat* their own cows. One of the largeft farmers in the diftrict told me that ⁶⁵ he never bought a cow in his life !" he rears fifteen, eighteen, or twenty calves yearly, and fats his own flock; or, for want of room, fells them to graziers.

This forms a beautifully fimple plan of management; well adapted to a middlefoil farm; and especially eligible for gentlemen, and others, who are deficient in judgement, and unacquainted with markets. The proportion of grafs and arable being determined upon, and the quantity of flock ascertained, the machine is regulated, and nothing but a due attention to the number of heifers, annually reared, is wanted to keep it in continual and uniform motion. A certain number of dairy cows, with a lot of fatting cattle, and another of young flock to follow them, in fummer, and to eat ftraw; in winter, No going to market, but with corn, dairy produce,

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duce, and cullen cows. A plan of general management, beautiful in theory; and, if one may judge from the comfortable independency which the perfon above alluded to is poffeffed of, through a perfeverance, by his father and himfelf, in this courfe of management, it is eligible in practice.

DAIRY MANAGEMENT. WARWICK-SHIRE, almost throughout, comes under the description of a dairy country; and, in the DISTRICT of the STATION, the dairy forms a confiderable branch of the business of almost every farm. The outlines of practice are, therefore, requisite to be traced.

The SIZES of dairies, here, are feldom large: fifty cows form the largeft in the diftrict: thirty are confidered as a large-fized dairy: twenty a middling fize.

In taking a view of the dairy of this district, it will be necessary to separate the three principal branches :

Calves; Butter; Cheefe.

FATTING CALVES. The male calves, except fuch as are reared for breeding, are,

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as has been intimated, almost invariably fatted.

Calves are, here, fatted at the teat; and, in the early part of the feason, are kept to a good age. But cheefemaking once begun. they are butchered as they drop: at not more, perhaps, than three or four days old; nor at more, perhaps, than three or four shillings price. The market, the manufacturing towns, and the collieries, of Staffordthire.

The only circumstance relative to the maragement of fatting calves, which requires notice, is an expedient used by some individuals, but not, I believe, in universal practice. to make them lie quiet; more efpecially during a temporary fcarcity of milk ; which will fometimes take place. In this cafe, balls, made of wheat flour, and a fufficient quantity of gin to form it into a paste, are given them; three balls, about the fize of walnuts, being given about a quarter of an hour after each meal. The effect is, that instead of wafting themfelves by inceffant " bawling," they lie quiet; fleeping a principal part of their time. By a little cuftom, the calves get fond of these PASTE BALLS; eating them freely

freely out of the hand; a proof of their being acceptable to their ftomachs. As an *expedient*, they are evidently eligible; and may be of fervice to a reftlefs calf; even when milk is plentiful. This, however, by way of intimation.

BUTTER. The only idea which I met with respecting milk butter, and which is entitled to a place, here, is that of doing away the rancidnefs of turnep butter, and the bitternefs of barley straw butter, by a most simple and very rational means. Instead of putting the cream, immediately as it is skimmed off the milk, into the jar or other retaining vessel, it is first poured upon bot water, and, having stood till cool, is skimmed off the water ! a new idea: but, I will venture to repeat, a most rational one; though I have not myself had an opportunity of proving it.

In the fame dairy in which the above expedient is ufed, a method of improving the quality of *whey* butter is practifed. This improvement is effected by *fcalding* each meal of cream, as it is taken off the whey; by hanging it over the fire until "fcalding hot;" being careful not to let it boil. This too, I register as a fimple and rational procefs,

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no reason to doubt.

CHEESE. This is the grand object of the Midland dairy. Very confiderable quantities are annually made; particularly, as has been obferved, in Warwickschire, and in this neighbourhood,—where cheese of a very fine quality is not unfrequently produced.

It will, therefore, be proper to take a general view of the fubject: for although, after the recital of the practices of Glocestershire and Wiltshire, much important information cannot be expected; yet it is more than probable, some interesting circumstances will arife.

The particulars which, in this cafe, require to be noticed, are

Soil,	Rennet,
Herbage,	Running,
Managers,	Curd,
Species of cheefe,	Checle,
Time of making,	Markets,
Quality of milk,	Produce.
Colouring,	

Soit4

SOIL. For an account of the foils of the best dairy parts of *this* district, see MIN. 55, in which it appears that a *cool* foil is favourable to cheese.

Nevertheles, I received an idea, here, from a most experienced and intelligent manager, that a very cold "weak" foil is improper for the dairy: that is to fay, a foil may be too cool for the purpose. The cheese it affords, though good in quality, is found deficient in quantity. His own farm being principally of that description of land, he has, during the latter part of his life, made rearing his principal object; confidering his dairy merely as being subordinate to that end.

HERBAGE. An account of the herbage of the cheefe farms of this diffrict will likewife appear in MIN. 55.

What remains to be registered, here, is the circumstance of cheese being, not unfrequently, made from *new leys*; even of the first or second year; while they consist chiefly of *red clover*, with, perhaps, a mixture of *raygras*; yet, from these cultivated graffes, provided *trefoil* make no part of them, good Vol. I. A a cheese

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cheefe is made. A fact which dairy farmers, in fome diftricts, would not readily credit.

MANAGERS. A striking instance of the folly of dairymen being inattentive to the business of checkemaking occurs in this district; where a dairy farmer declares, that, one year, he lost forty pounds, by the mismanagement of his dairywoman. This led him to an investigation of the business, himself, and this to a sufficient degree of superintendance, to prevent, in future, a similar loss. See GLO. ECON. on this subject.

SPECIES OF CHEESE. The only "factor's cheefe," made in this diffrict, is thin cheefe of new milk. The fize, that of fingle Glocefter-fhire, or formewhat thicker *.

For

* The CHEESE VATS of this diffrict are merely "hoops" of ash, with a boarden bottom. I do not recollect to have seen one instance of " turned vats" being in use. The diameter about sisteen inches. The depth two inches, more or less.

The "FILLET" of this diffrict is of wood : a long fhaving or fplint of afh; an inch or more wide, and an eighth of an inch or more thick; not formed into a hoop, but left open, with the ends tapering thin, and overlapping feveral inches. The part of the cheefe which rifes above the vat being gathered up

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For "family cheefe," more or lefs fkim milk is ufed; and fometimes, I understand, all skim milk. But this not being conformable to the prevailing custom of the country, the practice is looked upon as fordid, and waste becomes the necessfary confequence.

LEICESTERSHIRE is, at present, celebrated for its "cream cheefe,"—known by the name of STILTON CHEESE.

This species of cheese may be faid to be a modern produce of the Midland District. Mrs. Paulet of Wimondham, in the Melton quarter of Leicesterschire, the first maker of Stilton cheese, is still living.

Mrs. P. being a relation, or an acquaintance, of the well known Cooper Thornhill, who formerly kept the Bell at Stilton (in Huntingdonfhire, on the great north road from London to Edinburgh) furnished his house with cream cheese; which, being of A a 2 a fin-

up and pinched in this fillet, its lower edge is entered within the vat, and, a broad cheefe board being put upon it, finks down with the upper part of the cheefe into the vat.

1789. Tin fillets are now become prevalent: an admirable improvement. Some care, however, is requifate, it feems, to prevent their rusting. a fingularly fine quality, was coveted by his cuftomers; and, through the affiftance of Mrs. P. his cuftomers were gratified, at the expence of half a crown a_{10} pound, with cream cheefe of a fuperior quality; but of what country was not publicly known : hence it obtained, of courfe, the name of Stilton cheefe.

At length, however, the place of produce was difcovered, and the art of producing it learnt, by other dairywomen of the neighbourhood. Dalby first took the lead; but it is now made in almost every village, in that quarter of Leicesterschire, as well as in the neighbouring villages of Rutlandschire. Many tons are made every year: Dalby is faid to pay its rent with this produce, only.

Thus, from a mere circumstance, the produce of an extent of country is changed; and, in this cafe, very profitably.

The fale is no longer confined to Stilton; every innkeeper, within fifteen ortwenty miles of the diftrict of manufacture, is a dealer in Stilton cheefe. The price, at prefent, tenpence a pound, to the maker; and a fhilling to

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to the confumer; who takes it at the maker's weight.

Cream cheefe being an article of luxury merely, and a fpecies of produce which cannot become of general utility to agriculture, the art of making it does not come within the plan of this work; I therefore proceed to the manufacturing of milk cheefe, agreeably to the practice of the diffrict of the ftation.

TIME OF MAKING. Where the family is large, it is cultomary to begin as foon as the cows afford milk enough for a cheefe; continuing to make "family cheefe," until the cows go out to grafs. From the beginning of May to the beginning of August, is the time of making what is termed "year's cheefe:" continuing from that time, to the latter end of October, to make what is called the "latter weigh;" likewife for the factor: and from that time, until the cows go off their milk, make "family cheefe."

QUALITY OF THE MILK. It is not fo cultomary, here, as in the other cheefe countries, to fkim a part of the milk from which factor's cheefe is made : neverthelefs, in fome dairies

Aa 3

it

• the proportion fkimmed

it is practifed; the proportion skimmed varying in different dairies.

COLOURING. In the ordinary practice of the diffrict, cheefe is not coloured. Neverthelefs, fome few individuals use colouring; and find their advantage in doing it. The produce of one passes, at market, for WAR-WICKSHIRE, that of the other for GLOCESTER-SHIRE cheefe: the factors of course will give more for the latter than the former. To the confumers, therefore, this filthy practice owes its prevalency.

CORRECTING. In this diffrict, an inftance is mentioned in which a large lump of *alum* being kept in the cowl, during the time of coagulation, was *believed* to be efficacious in preventing the cheefe from heaving. This, however, by way of hint.

RENNET. Noeflablished mode of preparation.

RUNNING. The ordinary beat of the milk 85° to 90°. The time in coagulating, held out as proper, is about an hour; but, in practice, I have feldom or ever found fo flow a coagulation.

In a confiderable dairy, where tolerable cheefe was made, the practice was to bring the curd in about a quarter of an hour! but not

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not to break it up in lefs than three quarters ! I mention this to fhew how many different ways there are of producing cheefe of a moderate quality.

CURD. In fome large dairies, more particularly, perhaps, under the practice last mentioned, the *breaking* is done, not with a knife or the hand, but with the "churn dash !" an admirable thought, so far as expedition is thereby promoted. But, in a cowl of delicate curd, this coarse tool would no doubt be improper.

The gathering is done, in the ufual manner, with the hands and the difh, the whey poured off thro' a fieve, and the curd rebroken.

Scalding. In the prefeat eftablished practice, the curd is not scalded; except in the practice of a few individuals; but generally the cheefe. It is observable, however, and to me is very interesting, that the finest dairy of cheefes I faw in this district, was not fcalded, either in the curd, or in the cheese,

CHEESE, in the prefs. Having been vatted hard with the hands (or in fome few inftances, previoufly fqueezed in the prefs), and having ftood about an hour, it is taken out of the prefs and fcalded; by immerging it in water, A a 4 heated

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heated to about 150°, letting the evening's cheefes remain in the fealding liquor all night; and the morning's cheefes, until the water be cold; when they are placed again in the prefs; in which having remained a few hours, they are (in common practice) taken out; the cloth finally taken off; the cheeflings *falted*; replaced in the prefs; and, having flood another meal (in the whole two meals) are finally taken out of the prefs.

On the shelves. Cheefes, here, remain only a few days, with no peculiarity of treatment.

On the floor, the year's cheefe, or first weigh, is feldom or ever cleaned. The edges of the latter weigh are fometimes fcraped; and fometimes only rubbed with a HAIR CLOTH; an admirable utenfil in a cheefe chamber.

MARKETS POR CHEESE. London, the manufacturing towns, and the north of England, to which great quantities of cheese are sent from this district.

PRODUCE. I met with a well authenticated inftance, in this diftrict, of the produce of cheefe being materially influenced by the feafon.

One year twentyone cows produced four tons of factor's cheefe, belide the expenditure of of the family; together, upwards of four hundredweight a cow; yet, next year, the fame cows, with the addition of four or five more to the dairy, did not produce fo much cheefe.

The first fummer was warm and moderately wet; neither too wet nor too dry; a happy mixture of warmth and moisture; the pastures were eaten level, even to a degree of bareness, yet they always wore a freshness, and the cows, throughout the fummer, looked sleek and healthy. The next was a wet summer.

The medium produce of a core is three hundredweight, and upward.

The produce of the district would be difficult to afcertain; as it has not, with respect to the dairy, any determinate bounds. WARWICK-SHIRE, and the DISTRICT of the STATION fend a quantity of cheese to market, nearly equal, perhaps, to NORTHWILTSHIRE and the VALES of GLOCESTERSHIRE.

GRAZING. The Midland District, viewed collectively, is a GRAZING COUNTRY. South and East LEICESTERSHIRE, and much of NORTHAMPTONSHIRE, fall entirely under this defcription. WARWICKSHIRE, as has been faid, inclines more to the dairy.

The

The DISTRICT of the STATION contains a mixture of the two. There is one man, in this neighbourhood, fats not lefs than two hundred head annually. Most large farmers, beside the cullings of their own dairies, purchase folely for the purpose of "feeding :"—feveral of them grazing fifty head.

The SPECIES of grazing, which is here practifed, is, in a manner folely, SUMMER FATTING ON GRASS. Some may, every year, be finished with HAY and KEPT PASTURE: and a few individuals practife STALLFAT-TING, ON HAY and what is called "CUTMEAT;" namely, oats in straw, cut in a chaff machine; and fome, but very few, on OILCAKE *.

The

* FATTING CATTLE ON GRAINS. At Burton, in this diffrict, feveral hundred head of cattle, mostly cows, are annually fatted with HAY and GRAINS; the produce of the breweries of BURTON ALE; which being brewed of fingular firength, and, in the ordinary practice, little fmall-beer being made after it, the grains are of a very fuperior quality. They are mostly used fresh from the vats—fometimes warm—but never hot. When a redundancy happens, the overflowings are laid up in cafks and bins, covered up with mould. With these ftale grains malt duft is generally mixed. The usual quantity of fresh grains, a bushel a day; with about half a hundredweight of hay a week. From five to fax months is The practice of sUMMER GRAZING is, alone, entitled to particular notice : and this requires to be registered in detail.

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The SITUATION and SOIL have been defcribed, as forming a rich middleland diffrict: a defcription of country common to every, quarter of the kingdom.

The HERBAGE, too, appears aforegoing: moftly a kind of temporary fward, which has been defcribed; with a fmall proportion of old rough grafsland.

The defcription of CATTLE, -cows old or barren, and *heifers* which have miffed the bull; all of the longhorned breed of the diffrict, or from the more northern counties of Cheihire, Lancashire, &c. There is not, in the practice of *this* diffrict, a fingle ox fatted; except fome few *Welch runts*; and except, of late years, fome *Irifh bullocks*; and thefe, only by a few individuals.

PLACES

is reckoned a moderate time for lean cows to get good meat, with this keep. The price of grains threepence to fourpence a buffiel.

In the winter of 1785-6, when hay, at Burton, was 5s. a cwt.! a principal part of the produce of these breweries was bought up, by cowkeepers and others in the neighbourhood, at fourpence a bushel.

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PLACES OF PURCHASE. In this diffrict, the fpring fairs of the neighbourhood; to which they are brought by dairymen, who do not "graze;" or by drovers, who pick them up in the diffrict; thereby robbing the dairymen or the graziers of part of their profit;—or bring them from a diffance, performing, in this cafe, the office of uleful men.

In South Leicefter/bire, and the more grazing parts of the diftrict, where a fufficient fupply of cows cannot be had to flock their "feeding pieces," the graziers draw cattle from almost all quarters of the kingdom, fometimes going, in a fcarce time, as 1786, to the very feacoast of Wales to buy them; posting from fair to fair, for a week or a fortnight, without returning home; riding many hundred miles, perhaps, at a journey: a toil which nothing but the hope of "buying bargains" could enable them to go through. In general, however, they are brought, by drovers, into the markets of the diffrict *.

The

• At prefent (1789) the markets, and the grounds of the more grazing parts of the diffrict, are filled chiefly with IRISH CATTLE, of all fizes; from thinflefhed The POINTS most observable by the Midland graziers, would be difficult to define, in detail. Those already held out as the defirable points of a modern breeder, may be taken as those defirable to a modern grazier; the modern breed being, indisputably, eligible in a superior degree, as grazing stock. Nevertheles, there still remain fome few oldfashioned graziers, who prefer, or obstihately affect to prefer, *bone* to *blood*.

In general, however, we may fay of the graziers of this diffrict, as of those of every other, that they are led to their choice, not by any fixed principles or defined points, but by intuitive impressions, received from general appearances.

An experienced grazier knows, at fight, (and by merely putting his hand upon her), whether a cow or a heifer will fuit him. Her general form and "looks" pleafe him. She is everywhere clean; has little offal about her. Her eye is full and vivid; her countenance

fleshed lathy steers, of forty to fifty stone, to large heavystelled oxen, of seventy or eighty.

For further observations on Irish cattle, see MIN. 122. in the second volume. nance brifk; her fkin alive; and her flefh mellow. All together, fhe refembles many which he has grazed with fuccefs. While he rejects another; becaufe he recollects no inftance of her likenefs having done well; but, on the contrary, many which fhe refembles, having turned out unprofitably.

The art of purchasing is principally acquired by practice. The judgement is formed, not altogether by a scientific analysis, in detail; but extempore; being affisted in great part by the memory. And we may venture to say that no man can acquire an accurate and quick judgement, such as is requisite in purchasing cattle in a market, without some considerable science.

Nevertheles, I may repeat, here, what I have faid in another place, on the fame fubject *,—that the groundwork of this art, like that of every other, is reducible to fcience; and that the principles being afcertained, the ftudent will be enabled to acquire the requisite judgement much *fooner* than he could without fuch affistance.

The MANAGEMENT of grazing flock is the fame, or nearly the fame, here, as in other diffricts.

* GLO. ECON. vol. i. p. 245.

districts. Each ground,—provincially "feeding piece,"—has such a number of *cattle and sheep* turned into it, as, from experience, it is known it will carry; allowing about one cow and two sheep to two acres; more or fewer according to the quality of the land, or its state of productiveness *.

The *fhifting* of flock does not enter into the practice of this diffrict : confequently, the practice of grazing by headflock and followers is not here in ufe. The flock is turned in at Mayday, or the individuals as they are purchafed, and remain, probably in the fame piece, until difpofed of : the only attention beflowed upon this clafs of flock being, to give an eye to the fences, the pafture, and the water, to have a bull in the piece among cows +, and to attend to the health of the individuals.

Onc

* From ten to fifteen cows, and fifteen to twenty sheep to twenty acres.

+ For the purpose of making them lie quiet: not under the generally received idea that cows feed better -fat faster—for being in calf. Mr. Princep's cow (fee MIN. 119.), though the fatted extremely fast, and to an extreme degree of fatnefs, was not with calf. One circumstance in the treatment of grazing stock, in the Midland District, requires to be noticed. This is a want of RUBBING **POSTS**; especially in the more grazing parts of the district; where, to speak with little latitude, there are townships without a tree in them, or a post of any kind for the cattle to rub against. In *this* district, hawthorns, and other single trees, are common in most large pieces *.

Another circumstance, however, common, I believe, to the district, reflects credit on the Midland graziers. This is the number of **PENS** observable in the grazing grounds of the district. Almost every confiderable piece has a pen belonging to it; either separately or jointly with adjoining pieces; the same pen sometimes ferving three or four pieces. These pens, which are made high and shout enough for cattle, and close enough at the bottom for sheep, are not only useful on many occasions as receptacles of stock, but likewise

• RUBBING POSTS. In Northamptonshire they are pretty common; but there, as in most other places, they are merely a straight naked post. Whereas a rubbing post cannot be too rugged: a large bough, with the branches left two or three feet long, is more natural, and affords the cattle more *annifement*, than a smooth hewn post. See NORF. ECON. MIN. 66.

are

are convenient as places of communication, between piece and piece *.

MARKETS

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• GRAZING IN A WET SEASON. I cannot with propriety omit mentioning, in this place, an incident of practice which has occurred to me, this autumn, 1789, a very wet year.

The general complaint is, that grazing flock, though they have this year rolled in grafs, have not done well; Mr. HENTON of Hoby (in Leicefterfhire) being fingular in faying, that his feeders have done tolerably. Indeed, his flock corroborate his affertion. He had a lot of cows at Loughborough, the 12th of August, the fatteft in the show.

But his management is more remarkable than his fucters. He "foddered them with hay all the wet weather:" that is, HE MOWED THE BROKEN GRASS FOR THEM! beginning under the hedges, and continuing to mow the coarfelt patches, throughout the piece.

The first day (the day it was mown) the cattle feldom touched it; but the fecond or third day, they fell to it freely; eating it " between whiles," in preference to grafs. " In the morning it was always the first thing they filled their bellies with !"

The cattle having eaten up the more palatable parts of the herbage, the thiftles and other offal were raked up, and carried off the ground: most excellent management!

His flock confisted of about fixty head. At first, one man, only, was employed in mowing, &c. But, before the rainy weather ceased, he set on another man.

What an admirable thought! that which other men fuffered to fland wafte in itfelf, an encumbrance to the Vol. I. B b ground, CATTLE.

MARKETS FOR FAT CATTLE. On the fubject MARKETS, it has been faid, that the fouthern parts of the diftrict fend their fat to Smithfield; the northern to Rotherham; this quarter of it to Birmingham, and the other manufacturing towns. Of the laft I shall principally speak.

It is observable, that the grazed cattle of this district are fold, much underfat; unfinished : mostly in that state, in which cattle, in Norfolk and Herefordshire, are put to fatting.

This, however, is not intended as an argument against the Midland practice of grazing: the practices may be faid to originate in the markets, for which the stock is intended. In Smithfield, cattle fell at prices proportioned to their degrees of fatness. While in the markets of this district, even in that of Birmingham, where the manufacturers live in a style of extravagance, scarcely any difference is made, between beef that has been highly finished, and that which is in a state of forwardness-fleshy-" meaty." — This being the case, the butcher will give as much, or nearly

ground, and a nurfery of weeds, was converted to a food, more nutritious, in a wet feason, than the beilt of the standing herbage.

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nearly as much, by the pound or any other weight, for what are called "meaty things," as for those which are fat.

The places of fale are the grazing grounds, and the fairs of the neighbourhood; where they are bought, chiefly, by butchers from Birmingham, with a proportion from Wolverhampton, Walfal, &c. and fometimes from Manchester; and some few are driven out of this district to London. Birmingham may, however, be confidered as the grand mart of the district #.

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• Yet, extraordinary as it really is, the fairs of BIRMINGHAM are among the worlt in the country, for fat flock ! the butchers giving the graziers no encoufagement to drive their flock to them : preferring the toil of riding twenty, thirty, or perhaps forty miles from home, to pick up their " fat" ! fpending a principal bart of their time, and their profits, in an employment, truly ridiculous.

... How convenient it would be to the grazier, as well as to the butcher, to have a WEEKLY MARKET-a Smithfield, at or near Birmingham! to the grazier, in thereby having a constant and certain market, whenever he wanted either keep' or money; and to the butcher, in faving time and travelling expenses. Yet the few which are taken there, at present, are frequently drove out unfold !

But, at prefent, the day, Thuriday, the ordinary market day, is improper : Monday or Tuefday would be a more fuitable day : and SUTTON, perhaps, the most suitable place.

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In regard to the art of SELLING fat cattle, though it is not, perhaps, equally difficult as that of buying, neverthelefs it requires great judgement, and of courfe great or long practice, to conduct it with propriety. Not the weight of the quarters only, but the quantity of tallow, ought to be accurately effimated.

In judging this, the grazier has one advantage over the butcher : he knows the time his cattle have had, and how they have *done*, during the time they have been at high keep; and another, he fees them from time to time, and perhaps has the opinion of others upon them. The butcher, however, muft, in the nature of his employment, acquire a kind of judgement, which the grazier cannot readily arrive at. Neverthelefs, there are graziers will judge with great accuracy, both as to weight and tallow; while, incredible as it may appear, there are few butchers who are accurate judges.

On the whole, we may venture to fay, that THE ART OF GRAZING refts principally on judgement in *buying* and *felling*; not in this diffrict only, but in the other diffricts I have yet vifited. The mysteries of management ment are few. Neverthelefs, it is the moft dangerous department of rural affairs, the INEXPERIENCED can embark in. Jobbers and butchers are equally hackneyed in the ways of dealing; and it requires fome practice to be a match for them. Neverthelefs, by attention and perfeverance, a fufficient judgement may, in no great length of time, be acquired, to rife to a par with the generality of graziers. For, although there are fome few who are deeply verfed in the profession, the bulk of graziers are by no means proficient in the art.

PRODUCE. There are, not unfrequently, inftances of *heifers* doubling their first cost, by the fummer's grafs. I have known an instance of two heifers doing this. But they were bought under particular circumstances : namely, of a grazier, who, through want of judgement, thought them "weak conftitutioned :" he, therefore, fold them to another grazier, better versed in the art of purchase. for eleven pounds; and, the fame day, bought four cows, at ten pounds each. The former were fold, in October, for twentytwo pounds; the latter, at the fame time, for Bb3 thirteen thirteen pounds each. I mention this circumftance (of a thousand others that might be adduced), to show how much of the profits of grazing depends on judgement in buying-in stock.

To fpeak generally of the ordinary produce of the diffrict,—five to eight pounds is the par price of lean barren cows, in the fpring; and nine to twelve pounds, a good price for a fat cow, in autumn: thus leaving four or five pounds for the fummer's grafs, intereft of money, hazard, market expences, and attention. This, however, is reckoned great profit. Fifty fhillings, or three pounds, is a more ordinary profit of "common graziers:" that is, of men whofe practice is confined, and whofe judgement is fecondary: THE PROFITS OF GRAZING RESTING PRIN-CIPALLY ON JUDGEMENT IN BUYING AND SELLING.

REFERENCES tO MINUTES ON CATTLE.

For an inftance of the high price of lean eattle, with reflections, see MIN. 1.

For an inftance of a bad year for graziers, 53.

For opinion on the present fcarcity of stock,

For

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For an inftance of practice in grazing Scotch runts, 121.

For an account of an extraordinarily fat cow, 119.

For observations on bullocks at turneps, 118.

For further observations on the *fcarcity* of flock, and on *Irifb cattle*, see MIN. 122.

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SHEEP.

THE MIDLAND DISTRICT abounds' with SHEEP,—notwithftanding the nature of the foil; which, in general, may be faid to be better adapted to cattle, than to fheep.

The fituation and the nature of the foil,' however, are fuch as render it, in general, a' district in which sheep may be kept, with a degree of fafety.

The INCLOSURES, that are properly freed from furface waters, and are underdrained B b 4 where SHEE.P.

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where requisite, may be deemed found sheep pasture

On the contrary, the commons and com-MON FIELDS are most of them dangerous to this fpecies of stock. In 1783, a memorable year for the *rot*, the stock of some of the fields were swept away, entirely, by this fatal diseafe.

The breeds of this neighbourhood are various. They may, however, he reduced to two classes;

Shortwooled sheep—inhabitants of the commons and fields—provincially "field sheep;" and

Longwooled sheep-principally confined to the inclosures-provincially "pasture sheep."

FIELD SHEEP are, in fome part, reared in the diftrict. But the principal part of the fheep, feen on the commons, and in the common fields, are ewes, brought from the hills of Shropfhire, Staffordfhire, and Derbyfhire; but chiefly from the first; and, having reared their lambs, are either fatted in autumn, in the inclosures, or fold flefhy out of the fields, to the Walfal and colliery butchers, or are kept over winter, for another flock of lambs; which, in autumn, are driven into Worcefterfhire,

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thire, and the lower lands of Shropshire; where they are fatted, either on the autumnal grass, or are kept over winter, and finished in early spring;—the dealers bringing back a supply of ewes from the Shropshire fairs.

This machine has been going round,—this circulation has been kept up,—time immemorial; and, on reflection, appears to be a traffic founded on rational principles.

Befide the dangerous quality of the commons and fields, to a perennial flock, the keep they afford is not good enough for the " pasture sheep" of this country; but is sufficient for the maintainance of the small hardy mountaineers. It is not, however, fufficiently good to fat the lambs, even of this breed; but is equal to the purpose of rearing them; though produced by a crofs with a longwooled ram. On the other hand, the Shropshire hills are able to maintain their own breed, as breeding flock; but not to fat them : the old ewes are therefore fent, lean, to the open fields of this diffrict; by which means the Worcestershire farmers are fupplied with ftrong lambs, fuited to the rich lands of that country.

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This is a ftriking specimen of the IN-TERCOURSE OF DISTRICTS; which, while much of the kingdom lay in an open state, was probably more observable, and much more considerable, than at present.

PASTURE SHEEP. Formerly, there appears to have been only one breed of longwooled sheep, in the MIDLAND DISTRICT: a strong largeboned fort; which is still common to WARWICKSHIRE, and to much of the counties of LEICESTER and RUTLAND; and may, indeed, be still found, in every quarter of the district.

In Warwickshire and Staffordshire, this old breed of the country is diffinguished by the name of the "WARWICKSHIRE" breed; in Leicestershire, Rutlandshire, Northamptonshire, and Nottinghamshire, by that of the "OLD LEICESTERSHIRE" breed.

Of this breed, or rather of these two varieties, for they have their diffinguishing characteristics, there may, no doubt, be many valuable individuals; and a few flocks, that have been attended to, are of a tolerable quality.

In general, however, they may, without risque, be faid to be an unprofitable species of of flock; and, in many inftances, intolerably bad. I was led to the fight of a " true old Warwickshire" ram, the most completely ugly, and altogether, I think, the worft theep I ever faw*. His frame large, and remarkably loofe. His bone, throughout, heavy. His legs long and thick, terminating in large fplaw feet. His chine, as well as his rump, as sharp as a hatchet. As to fat, he had none; nor flefh enough to afcertain its quality; though his pasture was. good : his skin might be faid to rattle upon his ribs, and his handle be conceived to refemble that of a skeleton wrapped in parchment. Yet the proprietor of this creature rode all his ewes with him feveral feafons ; -giving for reason, that " he always finds his sheep fat enough at the time he wants to fell them :" a time, however, which, I underftand, does not arrive until they be fome three or four years old.

• Excepting one of the "true old Leicestershire fort," which was shown, to be let by the feasion, at Leicester ram show, in 1789. This creature might be faid to be in the lowest state of degeneracy. A naturalist would have found some difficulty in classing him; and, seeing him on a mountain, might have deemed him a nondescript: a something between a sheep and as goat,

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It must not, however, be conceived that all the rams of the "old forts" bear the above defcription; or that all the oldfashioned breeders are equally inattentive to their stock : nevertheles, we may fastely fay, that, upon the whole, the breeders are unpardonably remis, and their stock, in general, in a state of shameful neglect.

All that is required to be faid farther of the old flock of the country is, that it still has its warm advocates, and its leading breeders.

Mr. PALFREY of Fenham, near Coventry, takes the lead in the Warwickshire breed*; and

Mr. FRIZBY of Waltham, near Melton Mowbray, in the old Leicestershire.

During the laft thirty or forty years, the old ftock has been giving way to a MODERN BREED—a NEW VARIETY—which may be faid to be a creation of the Midland Counties; in

In juffice, however, to the good fenfe and differnment of Mr. PALFREY, he appears to have perfevered the longer in the oldbreed, not under the diffates of his own judgement, but in compliance with the prejudices of his cuftomers.

Mr. BARNARD, near Warwick, may perhaps be faid to be, at prefent, the most zealous supporter of the Warwickshire breed. in fome parts of which it has already obtained a degree of establishment, under the name of the "NEW LEICESTERSHIRE" BREED.

This being, at prefent, the most fashionable breed of the island, and, to the GRAZIER, one of the most profitable, its history is an interesting subject, and its merits an object of enquiry *.

The ORIGIN of this breed appears to have taken place in *this* neighbourhood. JOSEPH ALLOM of Clifton, who had raifed himfelf, by dint of industry, from a plowboy, feems to be acknowledged, on all hands, as the first who *diftinguished* himfelf, in the Midland District, for a superior breed of sheep.

He was known to buy his ewes at a diftant market; and was, in his neighbourhood, *fuppofed* to buy them in LINCOLNOHIRE; but, on better information, it appears, that he had them, principally, of Mr. STONE of Godeby, in the Melton quarter of LEICESTERSHIRE.

• The TEESWATER BREED has been already noticed (fee YORK. ECON.): the NEW VARIETY OF LINCOLNEHIRE I bave not yet feen. Nothing, therefore, contained in these remarks, must be considered as having any allusion to that variety; which, I believe, is the only diffinguishable variety of the island, that has not already fallen under my observation.

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In whatever manner he raifed his breed, it is certain, that, in his day, it was the fashion. among fuperior farmers, to go to Clifton, in the fummer feason, to choose and purchase ram lambs; giving, as I have been informed, by cotemporaries of Allom, from two to three guineas apiece.

This feems to be the only man who became distinguishable as a breeder of theep, in this part of the island, previously to Mr. BAKE-WELL: and, it may be reafonably fuppofed, the breed, through the means of Allom's flock, had paffed the first stage of improvement, before Mr. Bakewell's day.

We may neverthelefs advance, and without rifque I think, that to the ability and perfeverance of Mr. BAKEWELL, the Leicefterfhire breed of sheep owes the present high flate of improvement.

The manner in which Mr. Bakewell raifed; his fheep to the degree of celebrity in which they defervedly stand, is, notwithstanding the recentnefs of the improvement, and its being done in the day of thousands now living, a thing in difpute; even among men high in the profession, and living in the very district, in which the improvement has been carried on ! Some

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Some are of opinion, that he effected it by a crofs with the Wiltfhire breed; an improbable idea; as their form altogether contradicts it: others, that the Ryeland breed (fee GLO. ECON.) were used in this purpose; and with some show of probability. If any crofs, whatever, was used, the Ryeland breed, whether we view the form, the size, the wool, the flesh, or the fatting quality, is the most probable instrument of improvement.

These ideas, however, are registered, merely, as matters of opinion. It is more than probable, that Mr. Bakewell, alone, is in possession of the feveral MINUTLE of improvement; and the public can only hope, that he will, at a proper time, communicate the *facts*, for the government of future improvers.

citoufly feizing the fuperior accidental varieties produced; affociating thefe varieties; and ftill continuing to felect, with judgement, the fuperior individuals.

The practicableness of this method of improvement will appear in MIN. 60; where we find an individual of a very inferior kind of sheep, nearly approaching the best of the improved breed. Had this individual been preferved, by good fortune, or superior judgement; for the purpose of breeding from him alone, a variety much superior to the breed that produced him, might without doubt have been raised.

Let the means of improvement have been what they may, the improvement itfelf, viewed in its proper light, is evident and great; evincing, in a ftriking manner, the genius and perfeverance of its promoter. In the improvement of HORSES and CATTLE, Mr. BAKEWELL appears to have a fted in competition with other enterprizing breeders: but the improvement which has been effected in the Midland breed of SHEEP, may be faid to be ALL HIS OWN.

Mr. BAKEWELL, however (as other great men have had), has his DISCIPLES, who have affifted affilted him, very effentially, in establishing and diffeminating the "new Leicesterschire" breed of sheep; or, as it might well be named, from the place of its origin, the DISHLEY BREED.

To enumerate the whole of Mr. Bakewell's followers would be difficult and fuperfluous: neverthelefs, it appears to me neceffary, to the due execution of this work, to regifter fuch individuals as come within the limitation of PRINCIPAL RAMBREBDERS, of the MIDLAND DISTRICT: a tafk whole only difficulty will be that of avoiding offence, by a mifclaffification. The beft title to precedency appears to be, the length of time, which each has been in what is termed the "Difhley blood."

Mr. Stubbins of Holm, near Nottingham. Mr. Paget of Ibstock, in this district.

Mr.Breedon of Ruddington, Nottinghamshire.

Mr. Stone, Quarndon, near Loughborough. Mr.Buckley, Normanton, Nottinghamshire.

Mr. Walker, Wolfsthorp, on the borders of Lincolnfhire.

Mr. Bettison, Holm, near Nottingham. Mr. White, Hoton, Nottinghamshire.

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Mr. Knowles, Nailfton, in this diftrict. Mr. Deverel, Clapton, Nottinghamshire. Mr. Princep, Croxall, in this district. Mr. Burgess, Hucklescot, ------.

Mr. Green, Normanton, ———.

Mr. Robinfon, near Welford, Northamptonshire.

Mr. Moor, Thorp, in this district.

Mr. Aftley, Odfton, ——.

Mr. Henton, Hoby, Leicestershire.

Befide thefe leading men, there are many of lefs repute, in the Midland Diftrict, and many others, fcattered over almost every part of the island, particularly in Lincolnshire, Yorkshire, and so far north as Northumberland; also in Worcestershire, and Gloucestershire.

It is observable, however, and appears to me an extraordinary circumstance, evincing, in a remarkable manner, the weakness of men's judgements, or the strength of their prejudices, that, notwithstanding the rapid progress this breed of sheep are making in diftant parts of the kingdom, and notwithstanding the decided preference given to them, by those who have had experience of them in this district, the majority of the breeders and

and graziers, not of Warwickshire only, but of Northamptonshire, Rutlandshire, and Leicestershire, even within sight of Dishley, are inveterately against the breed ! and this notwithstanding many of their charming grounds, at present, are stocked with creatures that would disgrace the meanest lands in the kingdom*.

This feeming paradox can be explained in no other way, perhaps, than in the improper manner in which the improved breed have been promulgated.

Had the Difhley fheep, twenty years ago, been judicioufly diftributed over the diftrict, and had been, on all occafions, *permitted to fpeak for themfelves*, it appears to me probable, that there would fcarcely have been a fheep, of any other breed, now left in the Midland diftrict.

No professional man, whose judgement were not biassed, or entirely carried away, by the spirit of opposition, could hesitate a moment

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* NOTTINCHAMSHIRE takes the lead in this improvement. In the country between Nottingham and. Difhley, the modern breed may be faid to have gained, already, a degree of establishment. in his choice. But fo long as the fire is fanned, and the cauldron is kept boiling, fo long the advocates of the breed must expect to be in hot water; and, in the nature of men's paffions, fo long the new Leicestershire breed of sheep must have its powerful opponents.

It now remains to give a DESCRIPTION of the fuperior clafs of individuals of this breed; efpecially EWES and WEDDERS; in full condition, but not immoderately fat. The RAMS will require to be diffinguished in the next fection.

The *head* long, fmall, and hornlefs, with ears fomewhat long, and ftanding backward, and with the nofe fhooting forward.

The neck thin, and clean toward the head; but taking a conical form; ftanding low, and enlarging every way at the base; the forend, altogether, short.

The bosom broad, with the shoulders, ribs, and chine extraordinarily full.

The loin broad, and the back level.

The *baunches* comparatively full toward the hips, but light downward; being altogether fmall, in proportion to the fore parts.

The legs, at prefent, of a moderate length; with the bone extremely fine.

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The bone, throughout, remarkably light.

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The carcafe, when fully fat, takes a remarkable form: much wider than it is deep; and almost as broad as it is long. Full on the shoulder, widest on the ribs, narrowing with a regular curve towards the tail; approaching the form of the TURTLE, nearer than any other animal I can call to mind.

The pelt thin ; and the tail fmall.

The wool, fhorter than long wools in general; but much longer than the middle wools; the ordinary length of ftaple, five to feven inches; varying much in fineness and weight.

The COMPARATIVE MERIT of this breed will beft appear, by placing it, in its prefent flate, in the feveral lights in which it may be viewed, comparatively with other breeds: thereby, at the fame time, afcertaining how far the PRINCIPLES OF IMPROVEMENT have, in this cafe, been judiciously applied.

In BEAUTY OF FORM, the breed under notice furpaffes every other breed I have feen. I fpeak not of *picturefque*, but of *pofitive* beauty. Viewed as diffinct objects, the individuals of it are peculiarly pleafing to the eye,

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I do not, however, mention this as an evidence of their fuperiority. There are men of the first abilities, and of great knowledge and experience in sheep, who, as has been before mentioned, prefer what is called a *ufeful* to a *handfome* fort; a rife in the back, or a fall in the shoulders, to a want of flesh and fatting quality. If, however, beauty and utility can be united, which they evidently are in fome instances, perfection may be faid to be more nearly approached.

UTILITY OF FORM. The most diffinguishing characteristics of this breed,—that which might be confidered as its specific character,—is the fulness, and comparative weight, of its fore quarters.

This, however, feems to be contrary to the general principle of improvement, and affords matter of argument to the advocates of the old flock; who contend, that this form throws the meat upon the least valuable parts; legs and faddles, not fhoulders and breafts, being the favorite joints.

The advocates for the new breed argue, in return, that the majority of the eaters of mutton are of the poorer clafs, and that the grand object of the improvement is their fupply;

fupply; arguing farther, that upon a given fet of bones, and with a given quantity of other offal, a greater weight of meat may be laid on the fore quarters, than on the hind ones.

OFFAL. Another diftinguishing character of the modern breed is the smallness of their bone, comparatively with that of the old ftock, and most other breeds; not of the legs only, but of the ribs and other parts. I have seen a rib of a sheep of this breed contrasted with one of a Norfolk sheep : the difparity was striking; the latter nearly twice the fize; while the meat which covered the former was three times the thickness : consequently the proportion of meat to bone was, in the one, incomparably greater than in the other.

Therefore, in this point of view, the improved breed has a decided preference. For, furely, while mankind continue to eat fleih, and throw away bone, the former muft be, to the *confumer* at leaft, the more valuable.

The other offal is also light. The pelt thin, and the head fmall; and, it is faid, the in-C c 4 testines,

testines, and even the blood, are small in a similar proportion.

That the last two are comparatively finall, in proportion to the carcafe, when this is loaded with fat, in a manner that the carcafe of no other breed of sheep, probably, is capable of laying on, will be readily granted. But that they bear a smaller proportion to the carcafe in this breed, than they do in others of the same natural size, in the same condition, and going in the same pasture, remains, I believe, among a thousand other things relating to livestock, to be proved by a feries of accurate experiments.

FLESH. The criterions of good and bad flefh, while the animal is alive, differ in different fpecies of animals; and to alcertain them with fufficient accuracy, to render them fafe guides in every flage of poverty and fatnefs, and to render definitions of them, in the feveral flages, intelligible, would require a courfe of experiments and obfervations on a variety of individuals of each fpecies; attending them through every flage of flefhinefs to that of finished fatnefs; following them from the grazing ground to the flaughter house, and from thence to the table; and this with an accuracy of attention that has probably never been given; nor will, in

in all probability, ever take place, fo as to become of PUBLIC UTILITY, without the patronage of a PUBLIC INSTITUTION.

Nevertheles, in this district, there are men, who, from a long course of attentive practice, though not, perhaps, scientifically purfued, have acquired a sufficient degree of knowledge of this subject, to enable them to judge, by the touch, while the animal is alive, and low in condition, what the quality of the meat will be, when fat, and the animal is flaughtered; and this with some degree of accuracy: adequate, at least, to our present purpose; which is that of giving the student a general idea of the subject; as well as that of registering, for the use of future improvers, the ideas at present known respecting it.

The quality of the FLESH of CATTLE is beft ascertained when the animal is in a state of fleshines,—full of condition, but not fat. In this state, if the stath be bad, it handles bard, with a degree of bar/bnefs; if good, it is fost and mellow, with a degree of "loofenefs," or rather fupplenefs, or flexibility; which, as the animal acquires a state of states, gives place to a degree of firmnefs—fastnefs;—a quality quality fo nearly allied to hardness, that, without attending to the general state and condition of the animal, they might, by the inexperienced at least, be mistaken for each other.

But the FLESH of SHEEP is to be judged by fomewhat different criterions. These criterions, however, are not yet fixed. Professional men — breeders even of the first class—differ in their ideas of the subject : a proof that it has not yet been sufficiently studied.

It is, neverthelefs, allowed, by all fuperior breeders, that *loofenefs* is a *bad* quality of the flefh of *fbeep*, when living; as being the criterions of coarfe-grained, fpungy mutton.

But the criterions of good flesh are not yet fettled. One superior breeder is of opinion, that if the flesh is not loose, it is of course good; holding, that the flesh of sheep is never found in a state of hardness, like that of ill fleshed cattle:--while others make a fourfold distinction of the flesh of sheep; as looseness, mellowness, firmness, bardness: considering the first and the last equally exceptionable, and the second and third equally defirable;

defirable; a happy mixture of the two being deemed the point of perfection.

The flefh of fheep, when flaughtered, is well known to be of various qualities. Some is composed of large coarse grains, interfperfed with wide empty pores, like a spunge: others, of large grains, with wide pores filled with fat: others, of sine close grains, with smaller pores filled with fat: and a fourth, of close grains, without any intermixture of fatnes.

The flefh of fheep, when dreffed, is equally well known to poffefs a variety of qualities: fome mutton is coarfe, dry, and infipid; a dry fpunge; affording little or no gravy of any colour. Another fort is fomewhat firmer; imparting a light-coloured gravy only. A third plump, *fort*, and palatable; affording a mixture of white and red gravy. A fourth likewife plump and well flavored; but difcharging red gravy only; and this in various quantities.

It is likewife obfervable that fome mutton, when dreffed, appears covered with a thick, tough, parchmentlike integument; other, with a membrane comparatively fine and flexible.

But

But these, and some of the other qualities of mutton, may not be wholly owing to breed; but, in part, to the age, and the state of same fs, at the time of flaughter; and I wish to have it understood, that what is here offered, is intended to agitate, rather than to define with sufficient accuracy, a subject which may be said to be, at present, in a state of obscurity; but which is well entitled to a scientific discussion.

FAT. Examined in this light, whether we confider the *degree* of fatnels, or their *natural propenfity* to a flate of fatnels, even at an *early age*, the improved breed of Leiceftershire fheep appear with many superior advantages.

I have known an inftance, in the ordinary practice of a minor breeder, of "lamb hogs" (yearling wedders,—barely a year old), being fold in April (1786, a dear time) for 27s. to 28s. a head; while the common run of ill bred things were not worth more than 18s. each. There has, I am told, and by indifputable authority, been an inftance of yearlings of the beft blood being fold, in August (about a year and a half old), at 35s. a head !

a head! and other instances of their profitableness, to the grazier, will appear in the MINUTES.

The GRAZIER's object, undoubtedly, is to get sheep that will fat quickly : for even suppofing them to eat more food than sheep which fat more flowly, there is a material advantage accruing from their reaching market a fortnight or three weeks fooner than other sheep: grass mutton, for instance, bears a better price, at its first coming in, than it does a few weeks afterward; when a glut feldom fails of being poured into market. So far, however, from these sheep confuming more food than others, it feems probable at least, that sheep which are, in their nature, disposed to a state of fatness, become marketable at a fmaller expence of food, than sheep which are, naturally, of a leaner conflitution.

This is among the first of the many things defirable that remain to be *proved*. Some attempts have been made, in this district. But experiments, of a complex nature, require a degree of leisure, a minuteness of attention, a fund of patience and perseverance, and, above all, a habit of experimenting, SHEEP.

rimenting, that few men of bulinels poffels.

The degree of fatnefs to which the individuals of this breed are capable of being raifed, will, I am afraid, appear incredible, to thole who have not had an opportunity of being convinced by their own obfervation. I have feen wedders, of only two fhear (two to three years old) fo loaded with fat, as to be fearcely able to make a run; and whole fat lay fo much without the bone, it feemed ready to be fhook from the ribs, on the fmalleft agitation.

It is common for the fheep of this breed to have fuch a projection of fat upon the ribs, immediately behind the fhoulder, that it may be eafily gathered up in the hand, as the flank of a fat bullock. Hence it has gained, in technical language, the name of the FOREFLANK; a *point* which a modern breeder never fails to touch, in judging of the quality of this breed of fheep.

What is, perhaps, ftill more extraordinary, it is not rare for the rams, at leaft, of this breed to be "CRACKED ON THE BACK;" that is, to be cloven along the top of the chine, in

in the manner fat sheep generally are upon the rump. This mark is confidered as an evidence of the best blood.

Extraordinary, however, as are these appearances, while the animals are living, the facts are still more striking after they are *flaughtered*. At Litchfield, in February 1785, I faw a fore quarter of mutton, fatted by Mr. Princep of Croxall, and which *measured* upon the ribs *four* inches of *fat* !

But this I faw far exceeded in the mutton whose bone has been mentioned, and which, notwithstanding its extreme finenels, was covered with about an inch of muscular flesh, interlarded, and *five* inches of fat !

Since then (1786) feveral sheep of this breed have laid fix inches of meat on their ribs.

It is obfervable, that in fheep of this extreme degree of fatnefs, the mufcular parts decreafe in thicknefs as the fatnefs increafes, and are fo intermingled with fat as to give the whole a fatty appearance; and this moft efpecially in aged fheep; which, as aged cattle, have more fat in proportion to lean, than younger carcafes. A loin of mutton of a fheep (ten fhear) of twentyfix pounds a quarter. 400

quarter, weighed, when the fat was taken off, only two pounds and a half !

These are certainly interesting facts. But reflection aptly suggests the question, to what stomach can mutton like this be grateful?

The answer held out is, "fat mutton is the poor man's mutton: it goes farther than lean; and has, of course, a smaller proportion of bone than lean mutton. A poor man gives eightpence a pound for bacon, but only fivepence for fat mutton."

This femblance, between fat mutton and bacon, is not altogether imaginary. When falted, and kept fome time in pickle, even the palate perceives a ftrong refemblance. The advocates for growing bacon on fheep's bones, inftead of producing it, as heretofore, upon those of fwine, will fay, that the art of preparing it has already been carried fo far, as to deceive the palates, even of connoiffeurs in eating. If they can really fupply the markets with good bacon, at fourpence or fivepence a pound, their country will certainly have fome reason to thank them. But this by the way.

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It is also observable, in this place, that the breed of sheep under confideration, though they lay so great a quantity of fat upon the bones, feldom, in the butcher's phrase, "die well :" while the Norfolk sheep, for instance, as seldom "deceive the butcher." This accounts, in some measure, for the preference given to the latter, by the butchers in Smithfield. Tallow is a kind of boon which, if not forthcoming, incurs a disappointment the butcher cannot brook *.

The Leicestershire sheep, however, appear to me to posses a quality, which more than counterbalances that deficiency. They weigh above their appearance. They have, likewise, less offal (head feet and pelt), and, when fully fat, *proportionably* less "infide," than theep in general. When highly finished, they appear as a folid lump of flesh. Though small to the eye, they will weigh thirty, or perhaps, forty pounds a quarter. Their flesh is.

* With refpect to TALLOW, however, much depends on the AGE at which the animal is butchered; much, alfo, on BRBED. Thus, were the new Leicefterfhire fheep to be kept on to three years old, their produce of tallow would be encreafed: and the Norfolk breed, though mostly butchered at two years old, are remarkable for their produce of tallow.

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is, in reality, firmer than that of sheep which collect or lay up their fat within, while their muscles and their adipose membranes are left porous and spungy.

On the whole, we may venture to fay, that, in refpect to CARCASE, the NEW LEICESTER-SHIRE fheep have a decided preference to most, if not all, other breeds; and that the PRINCIPLE OF IMPROVEMENT is, this far, well founded.

Wool. Viewing the coat, abstractedly from the carcase, the Leicestershire sheep, compared with most other longwooled sheep, appear to disadvantage; and the Leicestershire breeders, perhaps, may seem liable to a degree of censure. Indeed, the coat, throughout the improvement, appears to have been set at nought; the carcase, alone, having engrossed the whole attention of the improvers.

But this is conformable with the general principle of improvement. Fleth—buman food—is the object the improvers have had in view; and it is highly probable that the more fuftenance there is expended on the wool, the lefs there will remain for the carcafe; befide a heavy fleece being, at certain feafons, inconvenient,

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convenient, and not unfrequently fatal, to the sheep.

Nevertheles, it appears, evidently, that a deficiency in the coat has, more than any other circumstance, hurt this breed of sheep in the eyes of the old graziers; and has, beyond dispute, greatly retarded their adoption.

It is a circumstance fomewhat extraordinary, however, and which, in justice to the breed, ought to be made public, that the deficiency of coat, which has done them fo much injury, has scarcely any other existence than in the arguments of their own advocates ! who abfurdly affect to prize them for a poverty of wool: holding out, in the wildness of argument, that a breed of sheep without wool would be the most defirable ! No wonder that fuch arguments should produce in the minds of men, who know the value of a fleece of wool, and who, perhaps, have only feen the sheep in argument, should conceive unfavourable ideas of them, and confider the flir that has been made about them, as a visionary flight, above their comprehension.

I mention these ridiculous arguments, the rather, and with greater freedom, as they not only retard the progress of this improvement, D d 2 but but militate against its leading principle; that of laying weight on the most valuable parts: for supposing an increase of wool incurs, necessarily, a decrease of carcase; yet, surely, wool at eightpence a pound (the medium price it has now been at some years) is more valuable, to the grazier, than mutton at fourpence.

The fast is, this breed of theep, when feen and examined, are not greatly deficient in wool. The wedders generally run about four to the tod (of 281b.); the ewes about four and a half; the fleeces of the former weighing fix to eight, of the latter five to feven pounds each.

Indeed, their cooler advocates argue, and with fome flow of *reafon* on their fide, that they not only produce more mutton, but more wool, by the acre, than any other breed of fheep.

This however remains, with the other defiderata relating to livestock, to be proved, by a feries of accurate experiments.

GENERAL OBSERVATIONS. From this comparative view, it evidently appears, that the modern breed, of Leiceftershire, are a valuable variety of longwooled sheep.

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In CARCASE, they may be faid to be nearly perfect •: fuperior, at leaft, to any other breed of longwooled fheep I have feen.

In wool, however, they fall fhort, I believe, of every other longwooled breed: owing principally, it fhould feem, to a falfe principle of improvement.

Nevertheles, taking them as they are at present, they are, to the grazier, professionally and distinctly confidered, a very profitable breed of sheep.

It now remains to place them among the other breeds of sheep in the island, and confider the whole, collectively, as a species of domestic animal.

The use and value of the CARCASE, as a fpecies of animal food, being obvious, we proceed to examine the uses and value of the wool.

In the warmer climates, favages go naked, and civilized focieties may difpenfe with vege-

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• Viewing this as a diffined breed, the difproportionate weight of the forequarters appears to me an imperfection. But confidering the prefent form of thefe fheep, as being capable of correcting the imperfections of almost every other breed of longwooled fheep, it might, in figurative language, be faid to be more than perfect.

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table

table coverings. Flax and cotton may fcreen the body from the fun, and give it, occasionally, the requisite degree of warmth.

But in more frigid climes, the natural nakednels of the human body requires a warmer covering: animal productions are in a degree neceffary. In the favage flate, the entire fkins of animals are transferred from brutes to the human body. But, in a flate of civil fociety and cultivation, the native animals are no longer adequate to the fupply. It has, therefore, been found requifite to domeflicate an animal, for the purpole of furnifhing a fubflitute.

In the choice of this animal, there appears to have been no alternative. Indeed, when we confider the natural defencelefsnefs of the fheep, among other animals in a flate of nature, human vanity is ready to fuggeft, that it was formed for the benign purpofe of furnifhing mankind, in a flate of civil fociety, and in a fituation of inclemency, with covering, of which they are naturally defitute. The quantity and quality of their fur, and the eircumflance of its being eafily collected, year after year, renders it indifputably, in the prefent

present state of society, and in the climature of this island, the most valuable of animal productions. There are many animals capable of affording us food, equally wholesome; but no one, in nature, able to furnish us with clothing, equally comfortable.

Hence, even as a fource of happinels to individuals, the coat of the fheep is an object of attention. But when we view it, at the fame time, as the encourager of industry, and the main fupport of commerce, it becomes, in this country, an object of ftill higher importance.

This nation, in particular, might be happy within itfelf, and respectable among other nations, without the carcase, but not without the coat; which is well known to be the grand basis of our commercial, if not of our political consequence. Beside, it is an indigenous produce of the island, which can always be had at will, and is not, like many other materials of manufacture, liable to the state of conquest, or dependant on those who shall hold the empire of the state.

Therefore, as an object of NATIONAL AT-TENTION, the coat of the fheep is of the first importance; and every wilful attempt to fupplant or debase it, is an act of treason against the state.

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Extending this enlarged view of the uleful purpoles of fheep to the feveral branches of RURAL ECONOMY, a third valuable property appears. Sheep, viewed collectively, befide affording food and covering to the human body, are applicable to the ule of MELIORAT-ING THE SOIL. And a fourth is equally evident. Sheep, if properly chosen, render productive a class of country, which makes no inconfiderable part of the furface of this ifland, and which, without them, would, while ir remains in its prefent state, lie entirely waste to the community. The description of country here meant is HEATHY MOUNTAIN.

In this general view of the INTENTIONS for which fheep are propagated in this island, the form and difposition become entitled to no inconfiderable fhare of attention.

To the mere GRAZIER, it is true, it matters not how fhort the legs, how compact the carcafe, or how fluggish the disposition, of his sheep; fo they will travel to market : quietness is, to him, a desirable quality. It is immaterial, to him, whether the face be black or white, whether the head has horns or knots, whether the wool and the legs be short or long,

long, or whether the bones lie in this or that form,-any farther than as fuch points are characteristic, or not, of a profitable animal, to bin. The shambles must determine the value of his carcafe, and the woolforter's warehouse the quality of his coar. The butcher and woolstapler jointly are the men whom the grazier has to look up to; and that sheep which will fat the soonest on a given quantity of food, and whole carcale and wool jointly will fetch the most money when the animal is fat, is the most profitable fheep to the grazier; no matter as to fize or form, the length or lightness of wool, or the colour or length of leg. Thefe, to a mere grazier, in a well foiled inclofed country, are not objects of attention ; provided a disposition of wildness, and a defire for rambling, do not thereby become a confequence *. But

* It has been observed, aforegoing, that the legs of the improved breed have been confiderably lengthened, fince their first stage of improvement; and with a good effect: they are now better nurses, and better able to travel to market, than they were before. But it appears to me that the improvement, in this respect, has reached the degree of perfection; and, perhaps in some individuals, has already overtopped it: I have seen frong

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But, to a MOUNTAIN SHEPHERD, activity is an effential property of his flock. There are many thousand acres of heathy mountains, on which the breed of sheep under notice could not exist. The same beds of heath, which afford the deerlike inhabitants of those wilds a principal part of their fustenance, would *fmother* a shortlegged longwooled sheep. A furze cover, or a thicket of thorns and briars, would be, for this, as eligible a pasture.

For the ARABLE FARMER, who keeps fheep for the purpofe of the FOLD, the longwooled breeds are equally improper. He, likewife, wants an active, cleanlimbed, longlegged, fhortwooled fheep, that can travel, in all feafons, without fatigue. In open barren countries, where fheep have half a mile, or perhaps a mile, to go to fold; and, when they return to their walk, have a great fpace of ground to go over, before their hunger be fatisfied, remaining upon their legs almost the day through,

strong fymptoms of *wildnefs* in this breed: a property of fheep, adapted folely to the grazier, which is among the first of bad properties to be avoided: and domestie animals, in general, appear to be in a confiderable degree wild, or cadifh, according to their respective powers of flight. through, fhortlegged longwooled fheep are ufelefs in this intention. I tried them in Norfolk, on a clean fandy foil, with a good walk, and an eafy drift. They funk under what heath fheep would have got fat upon; and on which the larger breed of Norfolk throve, as flore fheep.

It is, however, held out by the advocates of this breed, that they are, now, fince their legs have been lengthened, calculated for the fold; having been proved in this purpofe.

It is readily granted, that, for a few weeks, or a few months of fine weather, immediately after they have been fhorn, they may be well enough adapted to folding. But, whoever has feen "longwooled fheep" (no matter as to any nice diffinction of forts) waddling to and from the fold, in any other feafon, with loads of mud and water hanging to them, equal perhaps to twice the weight of their natural coats, would never think of fpoiling a valuable fpecies of grafsland fheep, under an idea fo truly vifionary; while we have other breeds, I mean, which are, already, adapted to the purpofe.

Nevertheles, it is much to be feared, that their legs have been lengthened, and their coats

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coats flortened, under the *extravagant* idea of rendering them fit for all the purpoles of rural economy, thereby qualifying them to fill *every* useful purpole of fheep, in order that they may become the *fole* breed of the ifland !!!

Viewing fheep generally, and in their various capacities and intentions, as well NA-TIONAL aS ECONOMICAL, it appears demonfirably, that, of the numerous breeds and varieties, at prefent in this ifland, forme *three*, *four*, or *five* diffinct breeds are, indifputably, and indifpenfably, neceffary to its prefent flate of profperity.

A very longwooled fheep, as the Lincolnfhire •, or the old Teefwater, for the richeft of found grafslands; and for the fineft worfted manufactures.

A fecond, as the new Leicestershire, for lefs fertile grafsland, as well as for rich inclosed arable lands, on which the fold is not used; and for the coarser worsteds, stockings, bays, coarse cloths, blankets, carpets, &c.

A third,

• I fpeak of the old Lincolnfhire: the new variety, I understand, are equally well, or still better, wooled. A third, a middlewooled breed, as the Wiltshire, the Norfolk, or the Southdown (of Suffex), or the three, for well foiled arable lands, on which folding is practifed; and for cloths of the middle qualities *.

A fourth, a finewooled fort, as the Ryeland, for the finest cloths +.

And a fifth, as the Shropshire, or a still more hardy race, for heathy mountain.

This general view, of the useful purposes to which sheep are applicable in this island, thas not been taken with the intention of depreciating the breed under confideration; but with the design of placing them in their true light, and of assigning them their proper soil and situation.

Nor can it be published with a view to cenfure the spirited improvers of this breed, while the result of it reflects on them so much credit : they

* By cloths of the MIDDLE QUALITIES, I mean narrow cloths, of three or four, to broad cloths, # twelve or fourteen, fhillings a yard : a latitude of quality which no are of the three breeds, here particularized, can, I believe, fill up; the three, or other breeds, equally various in the qualities of their wools, being requifite to the prefent flate of the woollen manufactory of this island.

+ Sce GLO. ECON.

they have evidently raised into existence a breed of sheep, which is peculiarly well adapted to their own foil and fituation; and, in doing this, have infinite merit; as having acted on the grand basis of all rural improvements. And although I have already expreffed myfelf generally on this fubject, I think it proper to repeat, in this place, that, for grasslands of a middle quality, as well as for arable lands where the fold is not in use,-a description of country which includes a large proportion of the valuable lands of the ifland, -the modern breed of Leicestershire sheep may, without undue praise, be faid to be near perfection; and that so long as a full demand for the species of wool they produce continues, fo long they, in their nature, must be, to the grazier, a very profitable breed of fheep : and further, that, fo long as any other breed of longwooled sheep remain with thin chines and loofe mutton, fo long they must be, to the breeder, a still more profitable species of livefock.

BREEDING. To give a comprehensive idea of this subject, the males and the females must pais separately in review.

RAME

RAMS. In the practice of the Midland District at large, the management respecting rams is fimilar to that of other parts of the island; the breeders *rearing* or *purchasing* them.

It is observable, however, that the advocates of the old breeds, though they will not adopt the modern stock, have fallen, in some degree, into the modern practice of *letting by* the feason.

Mr. PALFREY (mentioned above) lets a confiderable number of the Warwickshire *; and Mr. FRIZBY a still greater number of the old Leicestershire: both of them, however, at low prices, comparatively with those given for the MODERN BREED, of which chiefly I shall speak under this head +.

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* Mostly, however, tinctured, at prefent, with the new Leicesterschire blood.

+ Mr. FRIZBY is faid to let not lefs than "fourfcore" rams, annually, at the price, one with another, of five guineas a ram. At Waltham fair, in September 1789, Mr. F. had a fhow—(a fair to himfelf)—confifting of about an hundred rams of different ages. And every year, it feems, the principal part of his rams are let on that day. Thus, for nine or ten months keep of a hundred rams, and keeping open house one day, he is making fome hundreds a year. The rams of the MODERN BRBED are never fold; but are passed from breeder to breeder, by the feason, only.

For the purpole of promoting this intercourfe, each principal breeder has his show .OF RAMS; commencing, by common confent, the 8th of June; and lafting until Michaelmas, or until the whole are let.

During a few weeks after the flows commence, every rambreeder may be faid to keep open house.—Breeders and others, from all quarters of the kingdom, as well as the promoters of the breed who refide in the neighbourhood, attend these flows; going in parties from one to another : fome to take; others to fee and pass their judgements.

These private exhibitions close with a **PUBLIC SHOW**, at Leicester, the tenth of October; when rams of every description, but mostly an inferior fort of the improved breed, are collected; being brought in waggons; many of them a confiderable distance; fome to be *fold*; but chiefly to be *let*.

This flow has been held, I believe, time immemorial; not, however, for the purpole of letting; but for that of fule.

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The LETTING OF RAMS, BY THE SEASON, has long, I understand, been a practice in LINCOLNSHIRE *.

The ORIGIN, in the MIDLAND DISTRICT, may be traced—to a ram let, by Mr. BAKEwell, atLeicester fair, about forty years ago, at the low price of fixteen shillings +.

Humble, however, as was this beginning, it proved to be the first stone of the foundation of a department of rural business, that has already rifen to an astonishing height, and may, for some length of time, continue to bring in a copious source of wealth to the country.

The method of conducting this novel branch of rural bufiness will require to be detailed.

In the MANAGEMENT OF RAMS, kept for the purpole of letting by the feason, the following particulars require attention.

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• Whether the *letting* of rams is, or is not, an ancient practice, in England, the bufinefs of *dealer* in rams is, probably, of long flanding; or whence the *furname* of TUPMAN? a provincial appellation, at prefent, fynonimous with RAMBREEDER.

+ Mr. B. letting two more, the fame day, at feventeen fhillings and fixpence each.

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The choice, &c. of ram lambs.
Making up rams for fhowing.
Method of fhowing.
The points of rams.
Method of letting.
The conditions of letting.
The prices given.
Treatment after letting.
Sending them out.
Mathematical after stars

Method of using them. Expected treatment while out. Treatment after their return.

The principal rambreeders fave, annually, twenty, thirty, or perhaps forty RAM LAMBS; caftration being feldom applied, in the first instance, to the produce of a valuable ram.

For, in the CHOICE of these lambs, they are led more by blood, or parentage, than by form; on which, at an early age, little dependence can be placed.

Their TREATMENT, from the time they are weaned, in July or August, until the time of shearing, the first week in June, confists in giving them every indulgence of keep; in order to push them forward for the show: it being the common practice to let, such as are fit fit to be let, the first seafon; while they are yet yearlings-provincially "fharhogs."

Their first pasture, after weaning, is pretty generally, I believe, clover that has been mown early, and has got a second time into head : the heads of clover being confidered as a most forcing food of sheep. After this goes off, turneps, cabbages, colewort, with hay, and, report fays, with corn. But the use of *this* the breeders *feverally* deny; though *collectively* they may be liable to the charge.

Be this as it may, fomething confiderable depends on the ART OF MAKING UP; not lambs only, but rams of all ages. Fat, like charity, covers a multitude of faults; and, befide, is the beft evidence, their owners can produce, of their *fatting quality*,—their natural propenfity to a ftate of fatnefs: while in the fatnefs of the fharhogs is feen their degree of inclination to fat, at an *early age*.

Fatting quality being the one thing needful, in grazing flock, and being found, in fome confiderable degree at leaft, to be hereditary, – the fatteft rams are of course the best : though other attachments, well or ill placed, as to form, or fashionable points, will perhaps $\mathbf{E} \in 2$ have

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have equal or greater weight, in the minds of fome men : even in this enlightened age and district.

Such fhearlings as will not make up fufficiently, as to form and fatnels, are either kept on to another year, to give them a fair chance, or are caltrated, or butchered, while fharhogs.

SHOWING. The flows of the principal breeders confift, by common confent, of forty rams each; moftly from one to five floear; they being feldom found efficient after that age: fome, however, will continue in vigour to the fixth or feventh year *.

During the flow, they are mostly kept in fmall inclosures, of two, three, or four acres;

But, even at these ages, the decay of vigour is not natural; but is brought on prematurely, by the unnatural flate of fatness in which they are kept, and of which a variety of diseases, as well as a general unwieldiness of frame, are inevitable consequences. Female sheep are found to be prolific to a greater age.

It is obfervable, however, that the females, as well as the males, of the breed under notice, enter the ftage of decay fooner than those of other breeds. This circumflance is accounted for, in their entering the ftage of fatacles fooner than other fheep; and there may be fome truth in the idea.

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with three, four, or more rams in each; ac-, cording to their ages, and the advancement of the feason.

In a corner, or other convenient part of each paddock, a fmall pen, made with hurdles, is placed; for the purpose of handling them. Into these pens they go, through custom, as tractably, as worked oxen to their stalls. Indeed, the old rams, from the unwieldiness of their frame, and the load of fat they have to carry at this season, as well as from habit, will suffer themselves to be handled abroad; and even appear to take a pleasure in the respect which they have shown them.

Of late, a new method of flowing has been ftruck out by the leading breeder, and adopted by one, at leaft,—his faithful follower. Inftead of flowing them abroad, and driving three or four of them up together, into a pen, they are flut up in hovels, and thown feparately; being newer feen together.

Among accurate judges, this mode of flowing may be well enough; but, to those who have had less experience, it gives offence; as it deprives them of their best guide, compari-E e 3 fon;

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fon; and I can fee no fair advantage accruing from it to the letter.

The defirable POINTS of a ram are those which have been already enumerated. But the choice of the birer is determined, in fome measure, by the intention for which he is about to hire; as whether it be that of getting wedders, or mere grazing flock; or rams, for the purpole of letting. Hence the grazier, and the rambreeder, choole different sheep *.

The characteristic difference between what is termed a "RAMGETTER," and a "WED-DERGETTER" or a "good grazier's sheep," is that of the former being everywhere cleaner, finer: the head small, the bone and offal light, the shead small, the bone and offal light, the flesh good, and the form beautiful. The mere grazier likes a ram no worse for having a strength of frame, and is less forupulous about his form than the rambreeder; whose great object is finenes: his ewes,

• There is, however, one general guide, common to them both, and to which the judicious part of both pay fome attention; namely, the imperfections of their ewes. In whatever quality or point they are most deficient, a ram posseffing that particular quality or point, ought certainly to be chosen.

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ewes, and the natural tendency of the breed, ferve to give his offspring fize and fubftance*.

LETTING. A novel circumftance has likewife taken place, lately, in the business of letting. The long established custom of *fetting a price* is exploded; at least, by Mr. Bakewell and one of his disciples; whose customers are now left to make their own valuations, and—bid what they please.

This, as well as flowing them feparately, gives great offence; efpecially to flrangers; who cannot brook the idea of being " both buyers and fellers."

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The letter, however, has more than one advantage, in referving the price (provided he do not thereby drive away his cuftomers): he is, in effect, letting to the beft bidder. Befide, he is, through this mean, enabled to regulate his prices to his cuftomers, without giving any of them pointed offence.

The principal breeders are, in the nature of their bufinefs, competitors; and it is

Ee4

* Some, however, fet afide this diffinction; and, if there be no poffibility of breeding grazing flock too fine, they are undifputably right.

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no

no more than common good policy, in the leader at least, to advance himself, and keep back those who prefs upon him closeft. It is therefore good management, in him, to let a superior ram to an inferior breeder, whose ewes are yet of base blood, at a lower price, than to one who is farther advanced, and whofe ewes, perhaps, are nearly equal to his own: for, if the hirer may not thereby be able to get the lead from him, he may run away with part of the best prices; and the only line, the leader has to tread, is, either to refuse him, or to make him pay in the first instance. And, again,-fometimes two or three capital breeders will join, in the hiring of one fuperior ram; and, in this cafe, the blood being more widely difperfed, the price ought to be, and always is advanced, in proportion to the number of partners.

Hence, in the leader, a refervation of price may be allowable; efpecially in the letting of firstrate rams.

CONDITIONS OF LETTING. Notwithstanding the number of years the letting of rams has now been in use, and the extraordinary height to which the prices have risen, the transaction does not appear to have received, yet; any any fettled form; nor to have been rendered *legally* binding, by any written articles, or conditions of letting; much being ftill left to the *honor* of the parties.

It is, however, generally underftood, that the price agreed upon fhall not be paid, unlefs the ram in contract, "or another as good," impregnate the ftipulated number of ewes. If, through accident or inability, part only be impregnated, a proportional part of the price is abated. If he die while at ride, the lofs falls on the letter, whether his death happen through accident or neglect: no cafe, I underftand, having yet been otherwife determined.

It is likewife underftood, that the hirer fhall not fuffer him to ferve any other than his own ewes; and, of thefe, no more than a flipulated number, which is proportioned to the age or ability of the ram, and the mode of using him. And further, that if a grazier hire a valuable ram, at a weddergetter's price, (which is not unufual at the wane of a feasion, when valuable rams happen to be unlet) it is underftood—or rather agreed—that he fhall not rear rams from him : a condition which may frequently be advantageous to both

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both parties. The letter pockets five or ten guineas, which otherwife he might not have had; and the hirer, by fuffering himfelf to be "tied down" as it is termed, gets a greater improvement in his flock, than otherwife he could have got, for the fame money.

The time of paying the money is, I understand, unfixed : feldom, I believe, until after the ewes have brought proofs of the ram's efficiency.

THE PRICES FOR RAMS BY THE SEASON. From the first letting (see page 417.) to the year 1780, the prices kept gradually rising, from fifteen shillings to a guinea; and from one guinea to ten. In 1780, Mr. BAKEWELL let several at ten guineas each; and, what is rather inexplicable, Mr. PARKINSON of Quarndon, let one, the same year, for twentyfive guineas: a price which then astonished the whole country *.

From

* This ram was of the Difhley blood: but, though he was let at this fuperior price, and to a man of fuperior judgement, he did not long preferve the lead. Mr. Bakewell has been the greatest gainer by the circumflance; by which, in much probability, he has profited fome thousand pounds.

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From that time, to 1786, Mr. Bakewell's flock rofe rapidly, from ten to a bundred guineas; and, that year, he let two thirds of one ram (referving one third of the ufual number of ewes to himfelf) to two principal breeders, for a hundred guineas each; the entire fervices of the ram being rated at three hundred guineas! Mr. Bakewell making that year, by letting twenty rams only, more than a thoufand pounds !!

Since that time, the prices have been ftill rifing. Four bundred guineas have been repeatedly given *. Mr. Bakewell, this year, (1789) makes, I understand, twelve hundred guineas, by three rams (brothers, I believe), two thousand of seven, and, of his whole letting, full three thousand guineas + !!!

Befide this extraordinary fum made by Mr. Bakewell, there are fix or feven other breeders, who make from five hundred to a thousand guineas each. The whole amount of monies produced, this year, in the Midland

* Not, however, by individual breeders : three hundred have been given by an individual.

† Mr. B. now lets nothing under twenty guineas : a well judged regulation, which will probably be beneficial both to himfelf and his cuftomers. SHEEP.

36.

The

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land Counties, by letting rams of the modern breed, for one feafon only, is estimated, by those who are adequate to the subject, at the almost incredible sum of TEN THOUSAND POUNDS.

It is, I know, a popular idea; efpecially of those who, living at a distance, have only heard of these extraordinary things, without having an opportunity of coming at facts; that the extravagant prices, which are talked of, are mercly nominal; the principal part of the money being returned; the actual prices given, being small, in proportion to those held out.

This, however, is, I believe, and on the best authority, an erroneous idea. At the first setting out of the high prices, there might be some transactions of that nature; but, if they ever existed, they have ceased long ago. Mr. Bakewell, at present, has the name, at least, of being parsimonious, even to the schepherds of the flocks on which his rams are employed. His highest present, I understand, is five shillings; if the price be under fifty guineas, only half a crown.

The enormoufnels of these prices may be explained on other grounds.

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The bigb prices are not given by GRAZIERS, for the purpole of getting WEDDERS, as grazing flock; but by RAMBREEDERS, for the purpole of getting RAMS, to be let to graziers: the bigheft being given by the PRINCIPAL BREEDERS, only; not for the purpole of getting rams, to be let to graziers, as WEDDERGETTERS; but for that of getting rams, to be let out again, to inferior tupmen, as RAMGETTERS.

The graziers' prices run, even now, from one to ten guineas. I have not heard of more than ten guineas being given by a mere grazier for a ram, for the *fole* purpose of getting grazing stock : five or fix guineas is the common price.

Supposing he give the highest price, ten guineas, and that the ram ferves a hundred ewes, or even gets a hundred lambs (fome fingle fome double), the cost of getting amounts to no more than two shillings ahead; which is inconfiderable, compared with the difference between a well and an ill grazing scheep: between a sheep that will get as fat at two years old, as another will at three : or, in other words, which will, at two years and a half old, fetch ten or fifteen shillings more than than his comrades, of another breed, but of the fame natural fize, and going in the fame pafture *.

The middle prices,—as those from twenty to fifty guineas,—are, under prefent circumstances, equally reconcileable to common fense. If a breeder, who gives fifty guineas, rear ten tolerable rams, fit for the grazier's use, and let them at five guineas each, he brings himfelf home, even the first feason of letting; beside having the rams for another and another season; and beside a general improvement of his stock.

Those who give the *higher prices*,—as one to two hundred guineas,—have, or ought to have, proper bases to build upon—fufficient stocks of well bred ewes : in which case, they have a fair chance of producing ramgetters, worth—while the present spirit of improvement lasts—twenty to fifty guineas a season +. With

* See мін. 30.

+ There are inflances, though they are not very common, of the more valuable rams being kept, as stallions; the owners taking in ewes to be ferved by them. The price by the ewes, ten to fixty guineas a fcore.

It is likewife in practice, especially on letting the more valuable rams, for the letter to referve a firpulated number of ewes to himschf; either using the ram before he be sent out, or sending the ewes to the hirer's grounds. With refpect to the very bigb prices, they are given by a few firstrate breeders, who are playing a high game—running a hard race for the pride and profit of being leader, when Mr. Bakewell *is not*. A contention which may last as long as Mr. Bakewell; and be, at once, an honor to his genius, and a reward of his fervices.

TREATMENT OF RAMS AFTER LETTING. The breeders of rams, as well as of bulls, find it expedient to reduce them, from the cumbrous ftate in which they are fhown, previous to the feafon of bufinefs; the old rams, in particular, being frequently returned upon their hands nonefficient. Hence, as they are let, they are transferred to *private* paftures, and moderate keep; it being a pretty general rule not to *frow* a ram after he is *let*.

SENDING OUT LET RAMS. The ufual time of beginning to fend out is the middle of September. The means of conveyance, carriages of two wheels, with fprings, or hung in flings; fome of them being large enough to hold four rams. In these they travel from twenty to thirty miles a day: being fent in this way, fometimes, two or three hundred miles.

The

The METHOD OF USING these rams has lately received a very great improvement.

Instead of turning the ram loose among the ewes, at large, as heretofore, and agreeably to the universal practice of the island,-he is kept apart, in a separate paddock or small inclofure, with a couple of ewes only, to make him reft quietly; having the ewes of the flock brought to him fingly; and ferving each no more than once."

By this judicious and accurate regulation. a ram is enabled to ferve near twice the number of ewes he would do, if turned loofe among them; especially a young ram.

In the old practice, fixty or eighty ewes were efteemed the full number for a ram : in the new, from a hundred to a hundred and twenty are allowed : feven fcore have been ferved by one ram, in a feafon.

THE EXPECTED TREATMENT OF A RAM AT RIDE, is merely that of keeping him well, and free from diforders, fuffering him to ferve no other than the hirer's own ewes, and of thefe the limited number only, and to return him fafe when he has done; generally, the beginning of December; or, if the hirer has met him on the road (which is cuftomary), the

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the latter, in return, meets him on his journey home.

The AFTER TREATMENT confifts in ftriving, by every devifable means, to reload his carcafe, and thereby make him look, as fat and handfome as may be, at the enfuing fhow.

EWES. The fize of breeding flocks, viewing the diffrict at large, is various. Some GRA-ZIERS, namely, men who breed for their own grazing, will keep five or fix hundred ewes. But the ewe flocks of the RAMBREEDERS of the modern breed (of which, only, I fhall fpeak) run generally from one to two hundred.

In the MANAGEMENT of these flocks, there is no mystery, I believe; nor have I met with any thing extraordinary in it, or strikingly different from that of other breeding flocks. The management of ewe flocks, however, being a subject which has not yet entered fully into this register, it will be introduced with singular propriety, in this place.

The fubject divides, analytically, into

The choice of ewes.

Their fummer treatment.

The time of admitting the ram.

Vol. I.

Ff

Their

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Their winter treatment. Their attendance at lambing time. Their treatment after lambing. Weaning the lambs. Treatment of ewe lambs. Culling the ewes.

In the CHOICE OF EWES, the breeder is led by the fame criterions, as in the choice of rams. Breed is the first object of confideration. Excellency, in any species or variety of liveftock, cannot be attained with any degree of certainty, let the male be ever so excellent, unless the females employed, likewise inherit a large proportion of the genuine blood; be the species or variety what it may. Hence no prudent man ventures to give the higher prices for the Dishley rams, unless his ewes are deeply tinctured with the Dishley blood.

Next to breed is flefs, fat, form, and wool.

With ewes poffessed of these qualities, in any tolerable degree, and with a ram of the fame description, good WEDDERGETTERS, at least, may be bred, with a degree of certainty: and with those, in a higher degree, accompanied with a superior degree of neatncs, cleanness, fineness, and with a ram of this 36. MIDLAND COUNTIES. 435

this description, RAMGETTERS may be reasonably expected.

SUMMER TREATMENT OF EWES. After the lambs are weaned, the ewes are kept in common feeding pieces, at moderate keep; without any alteration of pafture, previous to their taking the ram. If, however, double lambs be defired, a flush of keep, at that time, might be eligible. See YORK. ECON. V. ii. p. 223.

The usual TIME OF ADMITTING THE RAM is, as has been intimated, about new Michaelmas; fooner or later, according to circumfances.

The WINTER TREATMENT confifts in keeping them well, on grafs, hay, turneps, and cabbages: no difference, I understand, being made in their keep, previous to the time of lambing. But see YORK. ECON. as above *.

With refpect to ATTENTION AT LAMBING TIME, it may be taken for granted, that, where the lofs of a fingle lamb may, poffibly, incur F f 2 the

* The alterations of keep, that are here intimated, may, however, be lefs requifite, in the management of the flocks, now more immediately under notice, which are always at what may be called high keep, than in that of more ordinary and lower kept flocks.

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the loss of a thousand guineas, no attendance or attention is spared.

The ewes of the modern breed, however, lamb with lefs difficulty, I underftand, than those of most other breeds of longwooled sheep*; the heads of the modern breed being much finer. Their shoulders, I understand, are the most common cause of obstruction.

TREATMENT AFTER LAMBING. From the time of lambing, to the time of weaning the lambs, the ewes are treated with every indulgence of keep: not more on account of a general defire to push the lambs forward, than on that of the ewes of this breed being, generally, bad nurses;—deficient in milk.

As the modern breed of Midland cattle "run to beef"—its modern breed of fheep "run to mutton;" and from the fame caufe: a natural propenfity, of extraordinary ftrength, to a ftate of fatnefs. I faw a ewe in the flock of a principal breeder, which, though fhe had reared two lambs, was, in the beginning of August, in a high state of fatnefs. The fact was, that, at weaning time, the latter end of July, this ewe was entirely dry, and how

· See Norr. Econ. MIN. 76.

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how long the had been to, was not then to be accertained.

This property of the modern breed is not held out as a charge against them : it is, on the contrary, a circumftance that appears, to my mind, much in their favor. The use of the milk of ewes (in England at leaft) is merely that of rearing their lambs; and is not, like that of cows, extended to the dairy. If a ewe can keep her lamb on milk, until it can keep itfelf on herbage, the has, to a ftore lamb at leaft, done her duty. More than will effect this is fuperfluous, and fometimes inconvenient or dangerous; and is, no doubt, a check to her thriving.

WEANING. The time of weaning is the latter end of July, or the beginning of August.

Previous to the feparation, the lambs are, or ought to be, identified, by ear-marking, or otherwife *; to guard against accidents, and the imperfections of the memory.

It is true, an experienced and attentive shepherd requires no other diftinguishment, Ff 2 than

* For the fire, the ear is generally marked : for the dam, ochre, or pitch is ufed ; marking the ewe and her lamb, previoufly to the weaning, in the fame part, or with the fame number, or letter.

than their natural forms and countenances; which, from a continued attendance, become as familiar to him, as the perfons and faces of his neighbours. There are fhepherds, not in this diffrict only but in others, who are able to couple the ewes and lambs of their refpective flocks; drawing them from two feparate pens, one containing the ewes, the other the lambs; fcarcely miftaking a fingle countenance. But the overfeer of a plantation knows every negro upon it, though they are in a manner naked; and an officer, every foldier of his regiment, though their dreffes are exactly the fame.

TREATMENT OF THE EWE LAMBS. The female lambs, on being weaned, are put to good keep, but have not fuch high indulgence fhewn them as the males : the prevailing practice being to keep them from the ram, the first autumn.

CULLING THE EWES. At weaning time, or previoufly to the admission of the ram, the ewes are culled, to make room for the "thaves," or shearlings, whose superior blood and fashion entitle them to a place in the breeding flock.

In the work of culling, the RAMBREEDER and the mere GRAZIER go by fomewhat different

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ferent guides. The grazier's guide is principally age; feldom giving his ewes the ram after they are four fhear. The rambreeder, on the contrary, goes chiefly by merit: a ewe that has brought him a good ram or two, is continued in the flock, fo long as fhe will breed: there are inftances of ewes having, been prolific to the tenth or twelfth year; but, in general, the ewes of this breed go off at fix or feven fkear.

In the practice of fome of the principal rambreeders, the "culling ewes" are never fuffered to go out of their hands, until after they are flaughtered: the breeders not only fatting them, but having them butchered, on their premifes.

There are others, however, who fell them; and, fometimes, at extraordinary prices. Three, four, and even fo high as ten, guineas each have been given for thefe outcafts.

There are in the flocks of feveral breeders, ewes that would fetch, at auction, twenty guineas each. Mr. Bakewell is in pofferfion of ewes, which, if they were now put up to be fold to the beft bidder, would, it is estimated, fetch no lefs than fifty each; and, perhaps, F f 4 through

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through the present spirit of contention, much higher prices.

It is now, I understand, in agitation TO LET EWES BY THE SEASON, in the manner rams are let.

Where this fpirit of breeding will end, or what will be its effects, time only can determine.

GRAZING. The fatting of sheep is a subject new to this work. The outline of the practice may, therefore, be sketched, with fingular propriety, in this place; immense numbers being fatted, every year, in the Midland District.

The fubject divides into the following branches:

Situation and foil,

Materials of fatting.

Description of sheep.

Mode of obtaining them.

Management during possession,

Markets.

Produce.

SITUATION. The MIDLAND DISTRICT has been defcribed as a well foiled middleland tract; chiefly in a flate of grafs; but with an interintermixture of arable land; especially in the DISTRICT of the STATION.

But the more GRAZING part of the diffrict, namely, South and East LEICESTERSHIRE, with the ADJOINING MARGINS of Rutlandfhire, Northamptonshire, and Warwickshire, consist chiefly of large grass feeding pieces, which are most of them stocked with a large proportion of sheep.

The MATERIALS OF FATTING are principally grass and bay; with fome few turneps and cabbages; but, even in the Diffrict of the Station, the two latter can fcarcely be faid to enter into the ordinary practice of the country.

The DESCRIPTION OF SHEEP varies with the fystem of management : in the DISTRICT of the STATION, the prevailing stock is culling ewes, partly of the longwooled, and in part of the *fhortwooled* breed, as has been already mentioned at the head of this article.

But, in the more GRAZING parts of the diffrict, the *longwooled* breed, and moftly *twofhear wedders*, with a proportion of *culling ewes*, are almost the only description of fatting sheep.

The MODES OF OBTAINING these feveral forts of sheep are various. The "graziers" many many of them *rear* a confiderable part of their flock; others *purchafe* wedder lambs of the breeders who do not "graze." On the contrary, the arable "farmers" most of them *purchafe*; excepting fome leading men, who, having adopted the modern breed, *rear* their own stock of grazing sheep.

The places of purchase of the fhortwooled ewes have been mentioned to be, principally, the fairs of Shropshire and Staffordshire: Dudley is the most noted place for these sheep. The longwooled ewes which are fatted in this district, are purchased at the autumnal fairs of the neighbourhood; but more particularly at the market of Tamworth; to which, in autumn, they are brought weekly; fome out of Gloucestershire; but mostly out of Leicestershire, and chiefly by one dealer; who brings fome thousand sheep every year into the district.

It is obfervable that, in the lots of thefe two defcriptions of fheep, individuals of all fizes and all ages, from a thave to a crone, are intermixed; no other feparation being made, than that of keeping the two forts diftinct. This circumftance, however, difgufting as it may be to a ftranger, who has been ufed to fee fheep fheep forted agreeably to their ages, is the caufe of lefs inconveniency, as they are all of them equally intended to be fatted, the enfuing fummer.

In the choice of grazing fheep, graziers differ, and in the most effential points. While one man is purchasing a lot for their neatness and cleanness from offal, another buys a pen of "rare strong boney sheep;" of which description the markets of longwooled sheep principally consist.

The MANAGEMENT OF FATTING SHEEP. The ewes have the ram about Michaelmas, or later: fome before, fome after they are purchafed. Grafs being the only dependence, here, for ewes and lambs, it is thought bad management to bring the lambs too early in the fpring.

The keep varies with the flock. The wedders, the first year, while shearlings, and the ewes the first winter, are kept as store stock*; but

• Little or no FOLDING is done in the Midland Diffrict: I do not recollect feeing one inflance; except in a light fandy field (Queniborough's) between Leicefter and Melton. In this cafe the hurdles were fet leaning outward, and propped with forked props, as in Glocefterfhire; not fet upright, in the ground, as in most diffricts.

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but the ewes from the time of lambing, and the wedders the fecond fummer, are of courfe at head keep; the prime wedders reaching market about September. The culling ewes are feldom ready until the enfuing fpring.

The method of *flocking* has been mentioned to be, that of mixing them with fatting cattle, or dairy cows, in the proportion of two to one: and, taking the diffrict at large, this may be the nearest proportion; but, in fome of its more grazing parts, I have observed large tracts of ground appearing to be stocked chiefly with sheep; the proportion of cattle being small *.

The only circumstance that requires particular notice, in the management of ewes and lambs, is that of the lambs being, fometimes, taken from the ewes, before they are fit for the butcher; and fatted, without the ewes, at clover or other high keep! a novel practice in grazing.

The leading principle, at leaft, is good. The ewes, of course, come sooner to market, than they would if the lambs remained with them

* Thefe, however, are, I believe, chiefly fore fheep on the most ordinary land, too weak for grazing bullocks. them a longer time : and those who practife this method fay, that after the first flush of milk is gone, the lambs thrive better on grass alone, away from the ewes, than they would if kept with them; by reason of their hanging after a little milk, in this case, which prevents their feeding freely on herbage.

I register this, not as the prevailing practice of the district, but as that of some intelligent judicious managers, who would not follow it, if they, themselves, were not convinced of its eligibility *.

In

* FATTING LAMBS ON GRASS. The keep of the lambs, in this cafe, ought certainly to be extraordinary; as raygrafs and white clover, early; and red clover in head, later in the fammer.

An improvement of this method is evident. Ewes vary, exceedingly, in the time of lofing their milk; and to take away those lambs, whose dams are yet in full milk, is felfevidently wrong; as removing those, whose dams are deficient in milk, from the ordinary pafture of the ewes, to higher keep, is more than probably right. Hence, examining the ewes, from time to time, and removing the lambs from fuch as are found deficient, appears evidently, to be the line of right management.

Rambreeders, at leaft, might, it is more than probable, profit by fuch a practice. Many of the ram lambs, at weaning time, appear in very low condition.

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In the *fhepherding* of fheep, in this country, a few circumftances may be mentioned with propriety.

Trimming the buttocks in the fpringprovincially "belting" in this diffrict, and "dagging" in the grazing country—is well attended to; and the produce turned to profit. There are graziers, keeping perhaps fome thousand sheep of different descriptions, who will make up a pack or two of "daglocks" yearly! The locks are washed, spread on the ground to dry, and packed up like species of marketable produce; used, 1 understand, chiefly in the carpet manufactories.

As a preventive of the fly, the Midland Inepherds use various applications, especially to the lambs. Trainoil is found to be efficacious; but it fouls the wool, and makes the Ineep difagreeable to touch. An ointment made of butter and the flowers of fulphur feems to be in the best repute *.

Infects

* The butter being melted, a fufficiency of brimfione is firred into it, to form an ointment of a pretty firm confiftency. In application, a piece the fize of a finall walnut is rubbed between the hands, and thefe drawn along the backs of the fheep.

There

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Infects certainly have their antipathies, and to find out those of the sheep fly is an interesting subject of enquiry.

The method of destroying maggots, here, is effectual, and, if applied in time, fimple and eafy. Instead of cutting the wool off the part affected, and fcraping off the maggots, with the points of the fhears, the wool is parted, and the maggots picked out with a knife, or otherwife diflodged, without breaking the coat; and a fmall quantity of white lead fcraped, from a lump, among the wool; which being agitated, the powder is carried evenly down, to the wound. Too much discolours the wool; a little prevents any farther harm from the maggots, that may be left among the wool; driving them away from the wound; and, at the fame time, is found to promote its healing. In well shepherded flocks, which are feen regularly twice a day, there is no fuch thing as a broken coat.

Artificial wash pools are here common. In fome countries, sheep are driven, perhaps two or

There are fome noftrums, in the fhops, fold for this purpofe; but those whose effects I have had an opportunity of observing, discolour the wool. or three miles, to the wash pool: a practice which is not only inconvenient to the shepherd, but dangerous to the sheep. Here, the smallest rill is rendered subservient to the purpose of washing sheep. In a convenient part, a wall is built across the rivulet, with an opening in the middle, to let the water pass, in ordinary; and with a small shoodgate fixed in the opening, to stop it occasionally. On one fide is the pen, and on the other fide a paved path, for the sheep to walk up, out of the pool.

With refpect to *fhearing*, I have met with nothing noticeable; except the extreme neatnefs with which the fheep of this diffrict are fometimes fhorn; efpecially the flow rams.

MARKETS. The markets for carcafes have been mentioned: London, for the wedders, &c. fatted in the fouthwestern quarter: Birmingham, &c. for the ewes and lambs fatted in the district of the station:

The markets for wool are various. Heretofore, most of it has been bought up by woolstaplers, living in different parts of the district. Some of it is forted, and, what is not wanted for for the manufactures of the district (namely, holiery in Leicestershire, and coarse worfteds in Northamptonshire) is fent to the diftant manufactories for which it is fuitable.

But, of late years, the manufacturers, themfelves, from Yorkshire and other diftricts, have bought up fome share of the wool, immediately of the growers.

The price of " pasture wool," namely, of the wool of the longwooled sheep of this country, has been, during the last feven years, fixteen to twenty shillings a tod, of twentyeight pounds. The price this year (1789) role from seventeen to nineteen shillings; --- with scarcely any distinction as to quality ! though, to the forter or the manufacturer, it may vary feveral shillings a tod. But the "breaking" of wool is a mystery. which lies not within the province of the grazier.

PRODUCE. The wedders, in eighteen or twenty months, are expected to pay, on a par of years, ten to twelve shillings a head, in carcafe, befides two coats of zvool, worth five VOL. I. Gg

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five or fix shillings each; together, twenty to twentyfive shillings; or about fourpence ahead a week *.

The ewes and lambs, of the longwooled breed, pay more. Suppose the improvement of the ewe five or fix shillings, and the produce of the lamb as much; with the fleece of the ewe three or four shillings, together twenty shillings; for twelve or fourteen months keep of the ewes, and two or three months of the lambs.

The fhortwools are allowed to pay ftilf better, but they are wilder and more mifchievous; and are chiefly in the hands of the fmaller farmers.—The Shropfhire wool, however, though fine, is very light; the ewes feldom yielding more than one to two pounds, each fleece; worth, perhaps, from a fhilling

• On the calculation of this country, where four fheep are, as grazing flock, effeemed equal to one cattle, this appears to be a low produce. If, however, we estimate the first nine or ten months at threepence, and calculate on the proportion of fix to one, the produce of the last fix or eight months will be equivalent to that of a bullock at two and fixpence a week.

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a fhilling to eighteen pence a pound; or about two fhillings a fleece.

REFERENCES tO MINUTES ON SHEEP.

For an inftance of the different qualities of fheep arifing from breed, 30.

For a striking accidental variety of sheep, '60.

For observations on the fatting of young theep, 105.

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SWINE.

THE NUMBER of fwine kept, in this district, is above par. The farms, of some of the more modern farmers, are mere hog warrens. But in what may be called the established practice of the district, the number kept is few; but the fize extraordinarily large; thirty to forty stones (of 14 lb.).

With respect to the PROPORTION OF SWINE TO COWS, I found, in the practice of one fu-G g 2 perior perior manager, only eight hogs to twenty cows, though no calves were reared. And, in that of another, in which calves are reared, only four or five to twenty cows. (See GLO. Ecox. v. i. p. 317.)

The species of fwine, in this diffrict, are various. The large black-and-white Berkfhire breed is the favourite, among the orthodox of *this* diffrict. But in the yards of more fashionable farmers, the "tonkey," or half bred Chinefe, are more commonly feen *.

Of fwine, as of every other fpecies of flock, Mr. BAKEWELL poffeffes a fuperior breed; a mixbreed fort; which I mention the rather, as it furnishes the only inflance, I have met with, of this species of stock being improved by breeding inandin; a practice which, though it is admitted as applicable to the three superior species of livestock, is considered by intelligent men, even of this district, as inimical to the species under notice.

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* There is, in this diffrict, a very extraordinary variety of the black breed of hogs: a "whole-footed fort." The hoof being entire, like that of the afs, not cloven, as that of hogs in general.

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One fuperior breeder *believes* he purfued the practice, until all his pigs became "ricketty;" another until they were all "fools!" and even Mr. Bakewell had a want of fuccefs at the outfet of improvement. Hz perfevered, however. He continued to fend his fows, year after year, to the fame celebrated boar (belonging to a gentleman in his neighbourhood), which boar is the father of the entire family: his daughters, and his daughters' daughters, having been regularly fent to him! The confequence is, the breed, fo far from being worn out or weakened, has been highly improved, by this inceftuous intercourfe.

The LETTING of MALE SWINE has not, I believe, yet been introduced into practice. But the price of the leap is properly raifed with the quality of the boar; as from one to five fhillings a fow.

In the MANAGEMENT of STORE SWINE, I met with only one idea that requires regiftering: namely, that of oats, being, in the opinion of professional men, preferable to *barley*, as a food, not of young pigs only, but of breeding fows.

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Another opinion, however, may be mentioned: namely, that young pigs require *warm* meat to make them *grow*. Corn and cold water will make them fleek and healthy; but warm beverage is confidered as requifite to a quick growth. This, however, is regiftered as matter of *opinion*.

The FOOD of FATTING SWINE is chiefly barley meal. Sometimes potatoes are mixed with it. Few beans or peas are now used in fatting fwine.

In the MANAGEMENT OF FATTING SWINE, I met in this diftrict with a minutia of practice, which well deferves a place in this regifter: namely, that of keeping two or three little flore pigs, in the fatting fty; for a purpose which theory would not readily fuggeft.

While the fatting hogs are taking their repaft, the little ones wait behind them; and as foon as their betters are ferved, lick out the troughs !

Befide the advantage of having, by this expedient, no wafte nor foul troughs, there is another. The large pigs rife alertly to their food, left the fmall ones fhould foreftall them; and fill themfelves the fuller, knowing that they have it not again to go to ! The

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The difadvantage of this practice is, I understand, the large ones are apt to lord it, too much, over the little ones; especially in a confined sty. If, however, they had a separate apartment assigned them, with an entrance too small for the fatting swine to follow them, this difadvantage would be in a great measure remedied.

In this diffrict*, I faw a FATTING STY, in a moft admirable fituation: by the brink of a ftream; which runs, on the dog kennel plan, through the yard of the fty.

The fty is a feparate building, fubstantial and commodious; the entire fite fhelving, from the gangway behind the troughs, down to the brook; in which the hogs, in warm weather, delight to bathe themfelves: cleanlinefs is a neceflary confequence. A difadvantage is that of fome part of the fulliage being carried away by the ftream +.

Gg4 GENERAL

• At FISHERWICK, the feat of the EARL OF DONEGAL.

† In a fituation, however, like this, where the fitream empties into *fift pools*, no eventual loss may ensue.

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GENERAL OBSERVATIONS

ON THE

IMPROVEMENT

OF

LIVESTOCK.

VIEWING THE LIVESTOCK of the kingdom at large, every fpecies, and almost every breed, is capable of very great improvement.

Except what has been done in this diffrict, with refpect to cart horfes, longhorned cattle, and longwooled sheep; in Yorkshire, with respect to cattle and sheep; and in Lincolnshire, thire, with refpect to fheep and horfes; the ftock of the ifland may be faid to lie in a ftate of neglect, and to call loudly for improvement.

Therefore, to attempt, while in the grand fcene of improvement, and while the fubject is fresh in the memory, to ascertain the most fuitable MEANS, and to enumerate the more evident EFFECTS, cannot be foreign to the present undertaking.

In a STATE OF CULTIVATION, the produce of a given country is applied, as much as may be, to the ufes or abufes of the human fpecies *poffeffing* that country. The three kingdoms of nature, fo far as they are controulable by human art, are rendered fubfervient to the fpecies. The native animals and vegetables, not conducive to human purpofes, are extirpated (or ought to be), as far as in their nature and human industry they are capable of being extirpated, and fuch, whether native or exotic, as are adapted to the various purpofes of mankind, are propagated.

In the choice of these productions, there are general rules observable: they ought to be adapted to the CLIMATURE and SOIL, to the STATE OF SOCIETY, and to the established

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blifhed customs and MANNERS of the given country.

In this island, it is customary to eat both vegetable and animal food, to go clothed, to ride on horseback and in carriages, and to carry on husbandry, manufactures, trade, and commerce.

The fpecies of ANIMALS propagated, at prefent, in this country, for the purpose of furnishing the requisite animal productions, are principally four :

> Horfes, Cattle, Sheep, Swine,

The purpoles for which these four species of domestic animals are severally propagated, in this country, are these:

HORSES for the faddle, for carriages, and for other purposes of draft, in manufactures and trade; and, at present, in the works of husbandry.

CATTLE for draft; and for animal food, as beef, and dairy produce.

SHEEP for a material of clothing and ma. nufacture; and for animal food; as well as for meliorating the foil, in a manner which, perhaps,

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perhaps, no other domestic animal, of this country, is capable of effecting *.

SWINE (with rabbits, poultry, &c.), for the purpose of food only.

The SPECIES of liveftock, and the PUR-POSES for which they are propagated, being afcertained, it will be proper to examine, next, the MEANS OF IMPROVEMENT.

One GENERAL PRINCIPLE of IMPROVE-MENT, common to the four species, is evident.

The island being limited in extent, the quantity of vegetable produce, in the prefent state of cultivation, is given; and the greater quantity of *profitable* animals the superfluous part of this produce, after the appetites of the prefent inhabitants are sufficed with vegetable food, can be made to support, and fit for their. several

* It is unneceffary to fay that MANURE, though collected in different ways, is a produce common to the four fpecies: its quality, *perkaps*, depending *more* on the food confumed, than on the *fpecies* of animal through which it paffes: neverthelefs, it is probable, *fomething* depends on the animal. The effects of the vifcera of different animals, on the vegetable fubftances which pafs through them, is a fubject on which the chemical art might be well employed; but which, probably, will never be profitably inveftigated, without the aid of a **PUBLIC INSTITUTION**. feveral purposes, the more plentiful these animals will become : consequently, the greater number of inhabitants may be supplied, at home; or the better opportunity will be afforded of furnishing our neighbours, either with animal or vegetable productions, as their wants may require.

To come at the MINUTIÆ OF IMPROVE-MENT, it will be proper to examine each fpecies feparately.

The HORSE being refufed as an article of human food (of European cuftoms the fecond in abfurdity), his perfection confits, folely, in *firength* and *activity*; with fuch a conftitution as will enable him, agreeably to the general principle, to fupport his ftrength and activity, with the fmalleft expenditure, poffible, of vegetable food.

Fashion, indeed, requires beauty of form; and even the utility of form varies with the particular purpose for which he is intended. For though a hunter and a dray horse both of them require strength and activity; yet they require them in different proportions, and, perhaps, in different parts.

Hence, in this fpecies of animal, the utility of form depends, minutially, on the intention : tion: ftrength and activity, with a good conflitution, being the effential properties.

SWINE being useful merely as an article of food, their perfection confifts in the fmallnefs of offal; in the goodnefs of flefh; in the quality of fatting, early and quickly; on their affecting herbage, especially such species as other domestic animals refuse *; and in having such a constitution as enables them to convert the vegetable produce, they consume, to the best advantage.

SHEEP. The grand purpole of fheep, viewed in this general light, is evidently that of producing a material of clothing, and an article of commerce, which no other fpecies of animal can fupply.

It has been shewn above, that, in the prefent state of society and commerce in Britain, wools of various degrees of length and fineness are requisite; and that they require vatious foils and situations, and various breeds of sheep, to produce them.

Thus,

* I fpeak of fwine, as a fpecies of liveflock in *buf-bandry*, merely; and leave it to those, whom it may concern, to make a proper choice of them, for the purposes of *manufactures* in which green herbage makes no part of their fustemance.

Thus, long wool, fit for the Norwich manufactures, could not, I believe, be grown on the Ryelands of Herefordfhire; nor fine wool, fit for the Wiltfhire cloths, on the marfhes of Lincolnfhire. It is ftill more evident, that wool a foot long, could not be grown on the Ryeland breed of fheep, though they were paftured on the marfhes of Lincolnfhire; nor wool an inch long, on the Lincolnfhire breed, though they were kept on the Ryeland hills *.

The fact appears to be, fomething depends on *climature* and *foil*, much on *breed*; for although the various breeds of fheep, now in propagation, may be, in nature, *the fame fpecies*; being what naturalifts term *varieties* +,—produced

* I with to have it underflood, that, by the RYELAND HILLS (which are by no means well determined) I mean a light, dry, warm, upland foil and fituation:

+ I confels, however, that I am here fpeaking the language of NATURALISTS, rather than the dictates of my own experience : indeed, whether, in the ANIMAL kingdom, VARIETIES are altogether accidental or artificial, or whether there are not, or have been originally, natural fubdivitions of SPECIES, would, with respect to DOMESTICATED ANIMALS, be now difficult to determine, and is not effential to the prefent discussion. duced by climature, foil, accident, and art, under the guidance of reafon or fashion, during a fucceffion of centuries; and although the three first might, in a length of time, make a material alteration in the various forts; yet they never could, by the general law of accident, be able to complete the reversion of the two forts abovementioned. Even with the affistance of art it might take fome centuries to accomplish it.

Hence, to attempt any material *change*, in the prefent breeds of sheep, would be imprudence in the extreme.

We have, at prefent, through time and the industry of our ancestors, various breeds; fome of them adapted, though not perfectly, yet in a very confiderable degree, to the foils they are upon, and the purposes for which they are wanted: and all we have to do is, to felect fuch of them as are more particularly adapted to the purposes required, and to the feveral foils and climatures of this island; and, having done this, to endeavour to COMPLETE THE IMPROVEMENT of these felect breeds: the general diftinguishments of which have been already given.

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In PRACTICE, the leading principle, on which every individual ought to conduct his improvement of this fpecies of livestock is, evidently, that of adapting his breed to his climature, foil, and fystem of management.

His first business is to gain a general knowledge of the feveral superior breeds of the island; and the next to examine whether, or not, the established stock of the country, he is fixed in, is best adapted to his purpose: if not, and a decided preference appear in favour of some other breed, he has no more to do than to introduce it.

But if, on mature examination, he find, as he most probably will, that the established breed of the country is, in its general nature, most fuitable to his end, his next business is to obtain a general knowledge of the superior flocks it contains, and from these to select the superior individuals: so far, I mean, as he can select them fairly and prudently.

The first step is to select FEMALES; and, in doing this, to be more anxious about the quality, than the number.

The felection of females being effected, their IMPERFECTIONS are to be afcertained : and and this effected, the next ftep is to procure, if poffible, wherever he may be found, the MALE best qualified to correct these imperfections; and, in the choice of him, to pay more regard to his parentage, and the stock he has got, than to any other qualification.

The foundation being thus laid, the means of carrying up the fuperstructure are evidently those of breeding inandin, and felecting, with judgement, the fuperior individuals produced; having ever in view the idea of perfection.

The PERFECTION of fheep, therefore, becomes a fit fubject of difcuffion. It varies, of courfe, with the breed to be improved.

With respect to zool, it confists in its being adapted, not to the given soil, and fystem of MANAGEMENT, only; but, perhaps, to the given CLIMATURE: otherwise, if we may reason from analogy, the improver appears to be setting himself against nature; a powerful opponent.

The coats of furred animals, in general, are fuller in winter than in fummer; and the coat of a horfe, kept abroad during winter, is *thicker*, and appears *longer*, than that of the fame horfe would be, if kept in a warm ftable,

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during the same season. But whether the coats of sheep are influenced by the same law of nature, as those of other furred animals, may not yet be determined; but probably remains an important subject of investigation.

With respect to carcafe, the perfection of sheep has been already intimated. It varies with the INTENTION; as whether it be food merely, on a genial soil, or melioration of the soil, as well as food; or food solely, in an inclement situation. But, for these different purposes, some difference in stature and disposition is the only requisite difference of carcafe.

In every fituation, a lightness of offal, a firmness of flesh, a strength of constitution, and a usefulness of form, are requisite.

The laft, the UTILITY OF FORM, is the only-one which requires to be noticed in this place.

The prevailing imperfection of the form of fheep, in the kingdom at large, is a deficiency of the fore quarters: a part which, in the modern breed of this diffrict, is, in the light of pofitive utility of form, evidently overloaded: but, confidering this breed as capable of correcting the other breeds of longwooled fheep in that part, its individuals may be

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be faid to be at prefent of a most useful mold. Whenever they have accomplished the requisite reform, it will, I am clearly of opinion, be right to lower the fize of their fore quarters.

The most useful form of a sheep, for the SHAMBLES, appears to me to be this: the ends equal, with a middle fo proportioned to them, that, when the sheep is in full flesh, the entire carcafe may take, as nearly as the nature of a quadruped will allow, the cylinder form : with a property of laying on its fat as evenly over its back and fides as the nature of its frame will admit; taking, when in a state of fatnels, the oval form : with a low fhort forend, growing out of the center of the carcafe; the neck and head, with the nofe thooting forward, forming a cone : a form, which, in my mind, is not only the most useful, but the most beautiful, a sheep can tak'e.

The most likely means of **PROMULGATING** a fuperior breed of sheep, and of promoting their adoption, appears to me, evidently, to be that of **DISPERSING THE WEDDERS**: fending them, while young, into the districts for which the breed is calculated. Shewing them H h 2 publicly,

publicly, there, in open market : putting them to grazing, in the neighbourhood of the place of thowing; and, when moderately fat, showing them, again, in the same market : having them flaughtered, in the place; and flowing their carcafes, on the fhambles, the next market day : not so fat as to turn men's stomachs, but fat enough to stimulate their appetites, and fhew them how foon the flefh is brought to fo defirable a flate : fending joints to the leading men of the district; to let them judge of it when dreffed : doing all this, not as with an intent of convincing men by force; but, merely, by way of giving them an opportunity of convincing themfelves.

If a breed of fheep will not bear this teft; coolly and firmly tried, and repeated; they are not, probably, fit to be propagated.

CATTLE. On all foils, and in every fituation, mountains and fens excepted; cattle are requisite in their three capacities of

> Dairy flock, Beafts of draft, and Grazing flock.

It may, however, be proper, before I proceed farther, to produce fome evidence that they

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shey are, in the prefent state of agriculture and population, and under the present customs of this country, requisite, as BEASTS OF DRAFT IN HUSBANDRY.

That they are not, under prefent circumflances, neceffary, in this capacity, at leaft not in any great degree, is pretty evident in the fmallnefs of the number worked at prefent, compared with the number of horfes now in use for that purpose. It is probable that, in England, not more than one fixth of the work of husbandry is, at prefent; done by cattle •.

But great and interesting as the subject of beasts of draft in husbandry undoubtedly is, it would be improper to enter largely into it, in this place. I have already touched upon it, repeatedly; and may, hereaster, have occasion to enter fully into its discussion : therefore, all I shall offer, at present, will be a statement of the COMPARATIVE EFFECTS of horses and cattle, as beasts of draft in husbandry.

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* This estimate must be received as, in great meafure, conjectural. It would be difficult to adduce data fufficient for an accurate estimate, This kingdom contains (near enough, at least, for our present purpose) thirty thousand square miles of CULTIVATED SURFACE.

Supposing the works of husbandry to be carried on folely by HORSES; and supposing twenty horses to be employed on each square mile (or about three to a hundred acres), the number of horses, employed in husbandry, would be fix hundred thousand: from which deduct one fixth for the proportion of cattle worked at prefent, there are, on this statement, five hundred thousand horses now employed in agriculture.

Admitting that each horfe *works* ten years, the number of farm horfes which die annually, in this kingdom alone, is fifty thoufand: each of which requires four years keep before he be fit for full work *: for which confumption of vegetable produce he returns not to the community a fingle article of

* It is true, that horfes are broke in at three, fome at two years old; but they are, or ought to be, indulged, in keep and work, until they be fix: fo that the coft of rearing, and fitting for full work, may be fafely laid at four years ordinary keep. of food, clothing, or commerce *. Hence it is evident, that, by the practice of working horfes in hufbandry, the community is lofing, annually, the amount of two hundred thoufand years keep of a growing horfe; which, at the low effimate of five pounds a year, amount to a million of money annually.

On the contrary, fuppofing the bufinefs of hufbandry to be done folely by CATTLE; and admitting that oxen may be fatted with the fame expenditure of vegetable produce. as that which old horses require to fit them for full work; and that, inftead of fifty thousand horses dying, fifty thousand oxen, of no more than fiftytwo ftone each, were flaughtered, annually; it is evident, that a quantity of beef, nearly equal to that which the metropolis now confumes, would be, annually, thrown into the market; or, in other words, a hundred thousand additional inhabitants might be fupplied with one pound of animal food a day each; and this without confuming one additional blade of grafs.

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• Even his skin, for economical purposes, is barely worth the trouble of taking off.

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I am far from expecting that cattle will, in a fhort space of time, become the univerfal beafts of draft in hufbandry; nor will I contend, that under the prefent circumstances of the island, they ought, in strict propriety, to become fuch : there may be fome few fituations in which horses ought, in propriety, to be used. But I know that cattle, under proper management, and kept to a proper age, are equal to every work of hufbandry, in most, if not all, situations. And I am certain that a much greater proportion, than there is at present, might be worked with confiderable advantage, not to the community only, but to the owners and occupiers of lands.

If only one of the fifty thousand carcafes, now lost annually to the community, could be reclaimed, the faving would be an object.

Impressed with these ideas, I return to the general subject.

On all foils, and in every fituation, MILK is a necessary of life.

On all foils, and in every fituation, BEEF is an article of human food.

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On all foils, and in every fituation, fens and mountains excepted, BEASTS OF DRAFT are neceffary,

In every culturable fituation, the three are requisite: and they are the *principal* requisites of cattle, in every fituation •.

Hence, the requisite qualifications of CATTLE are the same, in every culturable situation,

These qualifications form an interesting subject of enquiry.

DRAFT requires a cleannels of limb; a depth of carcale; a thriving constitution; and a head unencumbered with horns +.

MILE.

• MANURE, LEATHER, and TALLOW, are the infeparable productions of cattle. The quality of the first may depend, as has been intimated, on the quality of the food confumed. But the quality of the fecond, a necessary of life, and the quantity of the last, one of its greatest conveniencies, depend altogether on breed; and, certainly, ought not to be lost fight of, in the im, proving of cattle,

† In the ruder flages of fociety, HORN ranked among its first conveniencies: at prefent, it is little in mie: even the postman has, at length, found a substitute in tia,

MILK the fame: carcale is requifite; and horns not only ufelefs, but dangerous •.

BEEF the fame; except a depth of carcafe; and whether, in the prefent state of society in this country, a lightness of fore quarters is, or is not, cligible, appears to be a matter of doubt +.

Upon

* The horns of cattle are dangerous, not to horfes and the other fpecies of livestock only, but to each other; more efpecially to cows in calf: many abortions, I apprehend, are caused by them.

+ The idea held out, by modern improvers, with refpect to CATTLE, is, that a grazier ought to endeavour, as much as may be, to manufacture his materials—whether grafs, turneps, or other material of fatting,—into "prime joints:" as rumps, ribs, and furleins, worth fourpence to fixpence a pound; rather than into foulder blades and neck pieces, worth not more, perhaps, than twopence or threepence.

Yet with respect to SHEEP, a different language is held forth: in these, legs—the prime joints of a flep give place to *fooulders* and *breasts*, which are flyled "the poor man's mutton."

The fact appears to be, that these arguments have been contrived, and ingeniously enough, to recommend the modern breeds of cattle and sheep of Leicestershire; and are not raised on any general principle of utility, either to the grazier or the community; as they evidently militate against each other.

While there remains a fcarcity of " prime joints," and a fufficient plenty of " poor man's meat" in the market,

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Upon the whole, I think, we may fafely conclude, that ALL CATTLE ought to have the SAME POINTS: the only poffible difference,

market, it may be political in the grazier (merely as fuch) whether of cattle or fheep, to endeavour to throw in prime joints, and, by that means, to work up his materials to the best advantage.

But supposing cattle and sheep, in general, to be got into such a form, and into such a state of flesh, as would greatly encrease the number or quantity of prime joints; and, in proportion, diminish the quantity of poor man's meat, it appears to me, that neither the grazier, nor the community at large, would profit by such an *improvement*. For the price of a commodity, at market, being in proportion to the demand, the price of palatable joints would be lowered, as the quantity were augmented: and as the quantity of inferior meat were lessend, its proportionate price would of course be encreased, fo that the most probable effect of the *alteration* would be, the opulent would be relieved, and the poor differented.

The proportion of *bone*, and other *offal*, cannot be too much lowered; provided the ftrength and conflitution of the animal be not injured. But until an equalization of property take place, it might be wrong to attempt (were it poffible) an equality in the price of meat.

This far, at leaft, I am clearly of opinion, that, in the general light we are now viewing cattle and fheep, preferving fo much of the fore quarters of cattle, or encreasing them fo far, where they are at prefent deficient, as to give them the requisite firength in draft, would be no detriment, either to the landed intereft, or to the community: and farther I contend not, here.

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rence, requifite, being that of SIZE: and this, foil and climature would give, in a great degree.

In a lightfoiled upland fituation, the sAME BREED of cattle, which, on a deep ftrong foil, and genial climature, were lufty and powerful in frame, would become comparatively light and active. But whether we confider cattle as beafts of draft, or as grazing or dairy ftock, this change would be most defirable.

It is not my intention to recommend, to breeders in general, the adoption of one univerfal breed of cattle; but to fhow that no inconveniency, whatever, would arife to the community, were the various breeds of *this* kingdom, at leaft, reduced to one. Nor, after the change were effected, would there, I apprehend, any inconveniency accrue to individuals.

At prefent, however, we have feveral valuable breeds of cattle, in the ifland : and, in the diffricts in which thefe fuperior breeds are established, it would, I am clearly of opinion, be more eligible to improve the established breeds, than to introduce new ones,

Never-

Nevertheles, there are other districts of the island, whose present breeds of cattle are incapable of being rendered, in any moderate length of time, fit for the three grand purposes of cattle.

In these districts, therefore, a fresh breed is requisite; and it certainly behaves the owners and occupiers of them to introduce the most perfect breed the island at prefent affords, or to raise a FRESH VARIETY, and reach still nearer perfection.

To afcertain the PERFECTION of cattle, in their joint and feveral capacities of beafts of draft, dairy, and grazing ftock, is a matter of the first importance in rural affairs. But the fubject having never, perhaps, been agitated, no man may, at prefent, be equal to it : it is, however, a subject to which I have paid more than common attention: and I will here fet down what I conceive, at present, to be the most defirable qualities of cattle, viewed generally, in their THREE CAPACITIES. The fketch may, at leaft, throw fome light upon the fubject; and may be ferviceable to thofe, who shall have occasion to think upon it, in practice. The

The head finall and clean, to leffen the quantity of offal, and to give a liveline's of disposition; and hornle's, for conveniency in draft, and for general fafety; with the noftrils wide, for ease in work; and the eye bright and placid, to give the requisite quickne's, and docility, in the fame intention.

The neck thin and clean, to give lightnefs to the forend, as well as to leffen the collar, and make it fit clofe and eafy to the animal in work *.

The carcafe large: the cheft deep, and the boson broad, with the ribs standing out full from the spine; to give strength of frame and constitution, and to admit of the intestines being lodged within the ribs; thereby giving freedom to activity, and beauty to the general form.

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• The "SHIFT" is a point the grazier will not readily give up. I with that the fhoulder, as every other part, fhould be mellow, in moderate condition, and well covered in a flate of fatnefs. But the large FUNDLES of fat, which fome individuals, of fome breeds, form between the fhoulder and the neck, are, when cattle are full of flefh, as working cattle ought to be, inconvenient in draft.

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The floulders light of bone, and rounded off at the lower point, that the collar may lie eafy; but broad, to give ftrength; and well covered with flefh, for the greater eafe of draft; as well as to furnifh a defired point of fatting cattle.

The back, throughout, wide and level, as a receptacle of beef; the fpine being straight from the withers to the tail, to please the eye, and *perbaps* to give a due proportion and arrangement of parts.

The quarters long, lying up high, and ftanding wide at the nache, to give fize to the prime joints, and fymmetry to the form.

The thighs thin, and ftanding narrow at the roundbone, to give fafety to the dam, and activity to her produce; and, *perhaps*, for various other reafons.

The udder large when full, but loofe and thin when empty, that it may contain the greater quantity of milk; with large "dug veins" to fill it; and with long elastic teats, for the greater ease in drawing it off.

The legs (below the knee and hock) ftraight, and of a middle length: their bone, in

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in general, light and clean from flefhinefs, to leffen the quantity of offal; but with the joints and finews of a moderate fize, for the purposes of strength and activity.

The flefh mellow, in the ftate of flefhinefs, and firm, in the ftate of fatnefs; thefe being, I apprehend, the beft criterions of the flefh of cattle : the back and fides being covered, in either ftate, as evenly as the carcafe of this fpecies of animal is capable of being covered, to give as even a diffribution as poffible, of flefh and fat; with a proportional quantity of the latter, on the infide, to enable men to gratify their fight, while they are gratifying their appetites, with that laid on without, and, *perbaps*, to endeavour to leffen the prefent import of FOREIGN TALLOW, apparently, enormous and inordinate.

The hide mellow, and of a middle thicknefs; this appearing to be, on the whole, the beft: but the proper thicknefs of the hide is, perhaps, lefs underftood than any other property belonging to cattle. Breeders, dairymen, arable farmers, and graziers, differ much in their opinions refpecting it; and the leatherfeller, perhaps, has not yet been confulted.

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The colour,—any which can be joined with the foregoing qualifications; it being, perhaps, of little, if any effential import. If I had the choice of it, it should be white, or nearly approaching that colour.

The conftitution free from hereditary diforders, and inheriting the property of *hardinefs*, whether by this term be underftood, a fuperior faculty of bearing hard weather, hard fare, or hard work; as well as that of milking well on good keep, while milk is drawn, and of fatting quickly, and at an early age, when milk is not required.

There are feveral breeds of cattle in the ifland, which come fo near this defcription, that, with attention and perfeverance, they might, in no great length of time, be brought perhaps fufficiently near perfection; except with refpect to HORNS.

These are the breeds of Herefordshire, Gloucestershire, and South Wales, middlehorned breeds; the short and middlehorned breeds of Yorkshire; the Sussex, a middlehorned breed; with those of Devonshire and Somersetshire, of the middle cast of horn, but fomewhat long.

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In YOKE, in which the breeds here enumerated are still chiefly worked, horns are in a degree necessary.

But, in HARNESS, in which cattle in every quarter of the kingdom are now beginning to be worked, and in which, only, they are equal to every department of hufbandry, even the middle horns are extremely inconvenient, and in a degree dangerous (I fpeak from fufficient experience), and have, indifputably, done more, than any other circumftance, toward preventing cattle from being ufed, in common, as beafts of draft in hufbandry.

Wherever the LONG HORN prevails, as it does on a very confiderable part of the beft lands of this kingdom, cattle may be faid to be incapacitated as beafts of draft; and, if no expedient can be bit upon to prevent, or check, its growth, it becomes indifputably neceffary, to the PERFECTION OF ENGLISH AGRICUL-TURE, to extirpate the longhorned breed of cattle.

Wherever the breed requires to be changed, whether from the longhorned, or any other imperfect breed, common prudence dictates, that the most perfect breed ought to be introduced : duced : and, of course, in my idea, 2 HORN-LESS BREED, of the foregoing description.

Horns, it is true, are natural to cattle : the buffalo, in a state of nature, requires them; they are his only defence. But, in a flate of cultivation, horns are as useless to cattle, as they would be to horfes; and who, of two breeds of horfes, one with horns, the other without fuch an encumbrance, would chufe the horned breed ? What farmer, with his wits about him, would work a longhorned horse? a horse with large heavy horns, a yard or more long, hanging down below his mouth, fo as to prevent his coming either at the rack or manger, or flanding out from his head, fo as to prevent his keeper's coming within reach of it, with fafety ? while there were others. without this encumbrance, to be had at the fame coft ?

Horns are natural to sheep; but, although they are not materially injurious in a state of cultivation, our ancestors have thought fit to establish breeds of sheep without them: and no inconveniency, whatever, appears to arise from the change.

The practicableness of producing cattle without horns is out of dispute: there are L i 2 already,

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already, in this ifland, three or four diftinct breeds of hornlefs cattle; or rather breeds of cattle, many individuals of which are hornlefs, from which, properly chosen, a breed free from horns might, no doubt, be produced.

These breeds are the old shorthorned breed of Yorkshire; the Suffolk breed; a breed in Nottinghamshire, propagated chiefly by the late Sir Charles Sedley, probably a variety of the Yorkshire breed; and the breeds of Scotland; all of which, I believe, produce occasionally hornless individuals. The galloways fend out a breed, almost wholly without horns, and some of them of a good fize.

For ftrong and middlefoiled diffricts, there are individuals of the YORKSHIRE breed, nearly perfect; efpecially for the purposes of *milk* and *draft*: as *grazing flock*, the quality of their flesh may require fome improvement *.

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• Some of the GALLOWAY cattle are not deficient in the quality of their fleth. That of the NOTTING-HAMSHIRE breed has not fallen fufficiently under my notice to fpeak of its quality. That of the SUPFOLE breed is well known to be of a good quality.

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For lighter lands, there may be fuperior individuals of the SUFFOLK breed, in their present state, sufficiently perfect, for a basis at leaft. This breed has lately been introduced, as beafts of draft, in Norfolk; and (I fpeak from fufficient authority) with fingularly good effect.

I have digefted my ideas, on this fubject, with greater folicitude, as I am clearly of opinion, that, should agriculture be carried on, for a length of time, with the fpirit, and on the principles, it is at prefent purfued, a breed of cattle, answering nearly, if not exactly, the foregoing description, will, in the nature of human affairs, become prevalent, if not common to the kingdom; and I am of opinion, equally devoid of doubt, that, wherever a change of breed is requifite, not a feafon should be let slip, before a change, which promises fo much benefit to agriculture, and the community at large, be begun.

In this country, where the working of cattle may be faid to have gained a footing among leading men; where the inconveniencies of the longhorned breed is, of courfe, feverely experienced; and where the art

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art of breeding is well understood; there is a fair opportunity for genius and enterprize to exert themselves, with good effect; and, it is needlefs to tell the breeders of this diftrict, that he who sets about it, first, with judgement and spirit, has the fairest chance of profiting by the change.

The means of improvement fcarcely need to be detailed. The first step, whether in producing a fresh breed, or in improving one in a state of neglect, is to select females; and, their imperfections being duly ascertained, to endeavour to correct them by a well chosen male; continuing to breed, on the principles already repeated, with this felection; which cannot, therefore, be made with too great sircumspection.

The means of publishing and diffeminating a fuperior breed of cattle, appear to be those of thowing the oxen in harnefs, and the cows in full milk, and both in a ftate of fatnefs, wherever there appears a prospect of introducing them; and letting the bulls by the feason, or as stallions by the leap.

The ADVANTAGES to be expected from a GENERAL IMPROVEMENT, of the feveral fpecies of liveflock, in thefe kingdoms, will require

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quire to be examined, in a threefold light, as it would affect

> The improver, The diftrict, and The community.

To the IMPROVER, provided he were to act prudently on proper principles, the advantage would be, in a degree, certain. The ordinary *bazerd* incident to breeding, might be fomewhat encreased, at the outlet, by the extra cost of the first stock; but so it is in buying valuable horses for the purpose of making up, or prime bullocks for the purpose of grazing.

Befide the inftances which this diffrict affords, almost every other furnishes evidences, which tend to prove the advantages arising to individuals, from the improvement of liveflock: even a fingle male, purchased perhaps by accident, has been known to be highly advantageous, in improving the value of a man's stock, and, of course, in encreasing the amount of his profits *.

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* This district affords an inflance. Mr. LAKING of Hall End, near the banks of the Anker, owed his fuperior breed of cattle to a bull which he bought incidentally

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The truth is (though men in general do not appear to be fufficiently aware of it)—in a ftate of property, every man's poffeffion is limited : each man occupies fo many acres, and no more : confequently, in the prefent ftate of agriculture, he can produce no more than a certain quantity of vegetable food for ftock; or, in other words, his farm does, under his prefent management, produce only a certain quantity of herbage: and it is, of courfe, a thing of importance to him, whether this herbage be applied to a profitable or an unprofitable purpofe; whether it be fent to a good or a bad market.

He is well aware of the advantage of felling his wheat at fix fhillings a bufhel, inftead of four; and the fame, or a greater proportional advantage, indifputably depends, on whether he expend his herbage on fuperior, or inferior, breeds of flock.

This advantage, alone, is a fufficient motive to improvement : but when that of eftablifhing

dentally at an extraordinary price (at the time he purchafed him), but which he acknowledges was the cheapeft he ever purchafed. From a cow, his defcendant, and a bull of Mr. Bakewell, the celebrated snow ox (fhown fome years ago in London) was bred.

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blifting a fuperior breed; and of profiting by letting out the males, and perhaps by felling inferior females at high prices, are added, the inducement becomes ftill fronger: and it ought, in every cafe, to be remembered that he who fets out, first, has the higheft chance of profiting by the improvement.

If the root be judiciously chosen, and the leading branch be preferved, nothing but perfeverance is wanted, to bring home profit and honor to the improver *.

The advantages arifing to the DISTRICT of improvement are evident, in this diffrict. The fums of money, which are annually drawn into it, have been mentioned; and to this

• This district furnishes leffons to IMPROVERS: Mr. WEBSTER, tempted by high prices, parted with his leading flock, and lost his breed. Mr. BAKEWELL, Mr. PRINCEP, and Mr. FOWLER (until lately), by keeping their best flock in their own hands, have, respectively, improved their breeds.

Even DISTRICTS appear to be influenced by the fame principle. WESTMORELAND, "by felling any thing for money," has loft that breed which LEICESTERSHIRE, "by giving any money for a good thing," has raifed as high, perhaps, as, in its nature, it is capable of being improved. And, under the fame mifconduct, CRAVEN, it is to be feared, is now playing the lofing game.

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this advantage must be added, that arifing from the improvement of stock, within the district.

Yorkhire, too, affords inftances of this advantage. The introduction of even one male horfe drew, perhaps, feveral thousand pounds into the Vale of Pickering, which, otherwise, it would not have received: and the improvement of the cattle of the Vale, has been calculated at feveral shillings an acre, on the lands is contains.

This, indeed, will ever be, eventually, the refult of improvement; and it certainly concerns men of landed property to promote, by every prudent means, the improvement of liveftock, in the diffricts in which their effates are fituated.

In Yorkshire, there are BULL SHOWS: not for the purpose of selling or letting; but for obtaining a prize medal, or other reward, to him who can *produce* the best.

Rewards of this kind are highly laudable; but the prize ought not to be to him who produces, but who breeds, the best. In the former

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former case it may be bought; but in the latters, degree of ment must obtain it.

Another laudable example which I met the in the fame fcene of improvement, was that of a gentleman keeping a bull, of a fuperior breed, for the ufe of his tenants: an example which every landed gentleman, whofe eftate lies round his refidence, might well copy. For although, in the first instance, occupiers, as they ought, have the profits of improvement, they reft, eventually, with the owners of eftates.

The advantages expectant to the commu-NITY, from a general improvement in the feveral breeds of liveftock, is evidently that of general plenty. For, the island being life mited in extent, the quantity of vegetable produce, in the prefent flate of cultivation, is given; and the greater quantity of *profitable* animals, the fuperfluous part of this produce, after the appetites of the prefent inhabitants are fufficed with vegetable food, can be made to fupport and fit for their feveral purpofes, the more plentiful thefe animals will become:—confequently, the greater.

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preater number of inhabitants may be portunity will be afforded or furnithing other varions, as their respective to the variance, with animal or vegetable with actions.

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